The
Geographical Journal.

No. 6. JUNE, 1895. Vol. V.

EXPLORATIONS THROUGH THE INTERIOR OF THE LABRADOR PENINSULA, 1893–1894.*

By A. P. LOW, B.S., Geological Survey of Canada.

The overland expeditions made in connection with the search for the north-west passage, in the early part of the present century, by Sir John Franklin, have given the public a good idea of the northern portions of America to the westward of Hudson's Bay. This knowledge has been further supplemented by the information obtained by the expeditions sent out in search of Sir John Franklin, under such competent explorers as Sir James Richardson, Admiral Back, and Dr. Rae. The country to the east of Hudson's Bay, embracing the Labrador Peninsula, with an area of 289,000 square miles, owing to the prevalent opinion that it was practically an inaccessible, barren waste, has been slighted by the geographical world, and only within the last few years has any attention been paid to its systematic exploration.

The Hudson's Bay Company have had small posts scattered throughout the interior of Labrador since the commencement of the present century, and the various officers in charge of these posts must have had a good knowledge of the country, which, unfortunately, they rarely made public. The only account of the interior of Labrador, from the pen of a Hudson's Bay Company employé, was that of John McLean, who, being in charge at Ungava Bay, traversed the country between that place and Hamilton Inlet several times between 1839 and 1842. A record of his journeys is printed in his book, entitled, 'Notes of a Twenty-Five Years' Service in the Hudson Bay Territories.'

Until 1870, the Canadian government undertook no explorations beyond the southern watershed. In that and the following year,

* Communicated by permission of the Director of the Geological Survey of Canada. Map, p. 612.

expeditions were organized by the Geological Survey, to explore Lake Mistassini, situated just beyond the southern watershed, and drained by the Rupert river into Hudson's Bay. These explorations were only partly successful, and gave no definite knowledge of the size of the lake. Nothing further was done until 1884, when another expedition was sent to complete the survey of Lake Mistassini; this was accomplished in 1885, and the Rupert river was also surveyed by the writer to its mouth on James Bay.*

The next explorations of the western part of the Labrador Peninsula were made in 1888, when the Big river was ascended 200 miles from its mouth, and a traverse made from there northward to the Great Whale river, which was descended to its mouth; afterwards a survey was carried inland, from Richmond gulf to Clearwater lake. †

In 1887 Mr. Randal Holmes ‡ ascended the Hamilton river to Lake Winokapau, where he was obliged to turn back for want of provisions. Two years later, two parties from the United States, incited by the accounts of the Grand Falls, ascended the same river, and succeeded in reaching the falls within a few days of each other.§

In 1892 I received instructions to explore the lower part of the East Main river, with a view to its fitness for a boundary between the province of Quebec and the unorganized territories of the dominion.

The present paper is an account of the continuation of this undertaking in 1893–1894. The exploration of the East Main river was continued upward to its head, and from there the country was traversed northward to Ungava Bay in 1893; and an exploration of the Hamilton river, from its mouth inland to its head, in the centre of Labrador, was made in 1894. Because of the great extent of the country traversed, it is necessary, in such a paper as this, either to deal largely with the incidents of travel at the expense of the principal facts noted, or to devote attention almost wholly to the latter. Although aware of the difficulties inseparable from the last-mentioned treatment, it has been adopted in the following pages, in the hope that the added amount of information which it is thus possible to condense into a given space, may be of greater value than a more readable narrative.

Acting under instructions from Dr. Selwyn, Director of the Geological Survey, and accompanied by Mr. D. I. V. Eaton, as assistant and topographer, I left Ottawa on June 5, 1893, for Lake St. John, at the end of the railway line, 190 miles northward of Quebec, where we commenced our canoe trip. Stops were made on the way, at Montreal and Quebec, to complete outfit. At the former place, through the kindness of Mr. Chipman, Commissioner of the Hudson's Bay Company, I was furnished

---

* *Report Geol. Surv. Canada*, 1885. † *Ibid.*, 1888.

‡ *Proc. Royal Geog. Soc.*, April, 1888.

§ *Bul. Amer. Geog. Soc.* 1892; *Bul. Geol. Club*, Philadelphia, 1894.

with circular letters to the officers of the Company's posts in Labrador, enabling me to obtain the necessary information and aid to carry out the work in hand. As it is impossible to obtain provisions or supplies of any kind at the Hudson's Bay posts inland, and as all the able-bodied men belonging to them are away to Hudson's Bay, where they are engaged bringing in the next season's supplies to their posts, a supply of provisions sufficient for the whole trip had to be taken from Lake St. John. To transport these provisions and the outfit, we had two Peterborough canoes, 19 feet long, built of cedar, and each capable of easily floating a load of 1000 lbs. together with a crew of three men; along with these was a smaller cedar canoe and three others of birch bark. Four young Indians were engaged for the entire trip, and eight others to assist in the transport up the rapid streams to Lake Mistassini, some 250 miles away.

Lake St. John was left on June 17, and the Ashuapmuchuan river was ascended to its forks, where the Chéf river was followed a few miles to the Sapin Crôche branch, and thence up to its head in File-axe lake, near the height of land. From there a number of small lakes were passed through in crossing the watershed, and the Perch river was descended into the south-east bay of Lake Mistassini, where we arrived on July 2.

The only new exploration along this part of the route was from the forks of the Chéf river to File-axe lake, some 60 miles.

Along the Sapin Crôche the country is over one-half burnt, and is grown up with small black spruce, Banksian pine, aspen poplar, and white birch. Where unburnt the same trees are found, along with larch and balsam spruce. These are generally small, and seldom exceed 12 inches in diameter. The larch are all dead or dying from the ravages of the imported European larch gad-fly, the limit of its depredations now extending northward to the East Main river. The country towards the height of land is traversed by ridges of low rounded hills, with swampy lands and small lakes filling the valleys between.

About the southern part of Lake Mistassini the country is nearly flat, and is covered with a much larger growth of trees than is found in the region between it and Lake St. John. This is probably due to the superiority of the soil about the lake, which overlies bedded limestones; whereas in the rest of the region the soil is sandy drift, resting on gneiss and granite. From Mistassini the eight men with three canoes returned to Lake St. John, as no offer could induce them to go further. In consequence we had to depend on the natives of Mistassini for aid. Two old men and a small boy were found willing to go some distance with us. One of the old men had years ago made a trip to Nichikun, and as he was supposed to still know something of the route, he was engaged as guide to that place. The other old Indian

and boy were hired to take a load to the East Main river; but, as they were too feeble to carry loads on the portages, they were sent back from the outlet of the Rupert river.

At the Hudson's Bay post at Mistassini I was fortunate enough to get a small rough map of the route up the East Main river to Nichikun from a servant, who had formerly been employed at Nichikun. This map was our only guide for some 250 miles, as the old Indian had forgotten the route, and proved utterly useless as a guide. The Hudson's Bay post was left on July 5, with the entire outfit in one bark and three wooden canoes, the former being only used for a few days. From Mistassini to the end of the survey of 1892, on the East Main river, Mr. Eaton, the old man, and myself paddled one of the canoes, the four men being in the other two. Beyond this point to Nichikun Mr. Eaton was engaged making the survey, and consequently was transferred to one of the larger canoes.

From the Hudson's Bay post the lake was followed northward some 50 miles to a small bay on the west side, where a short portage was found leading to the Rupert river, which discharges from the lake some 10 miles to the northward. A short distance below the portage the river separates into two channels, about equal in volume, that do not unite again for upwards of 100 miles. The eastern channel was followed northward 50 miles, to where it passes through a long lake, and there turns westward to join the other channel. The river throughout flows swiftly along in a channel from 100 to 600 yards wide, nearly on a level with the surface of the surrounding country, and is greatly obstructed by small rocky islands. The country passed through is rolling, with low, rounded, rocky hills covered with a scant growth of small black spruce and Banksian pine. The route continues northward from the end of this lake, and for 25 miles passes through small lakes and streams, connected by ten portages, to Clearwater lake. These portages average over half a mile in length, and are all very bad, as they either pass through swamps or over ridges of boulders, where walking with heavy loads is difficult and at times dangerous.

Clearwater lake is an irregular body of water 15 miles long, with numerous bays. Its discharge flows northward through a flat country for 25 miles, and empties into the East Main river, about 300 miles above the mouth of the latter stream. Above the junction the East Main river is one-third of a mile wide, and continues so for 25 miles to the forks of the Tichagami branch, a large stream flowing from the south-east.

Five miles above the forks the survey of 1892 ended; and this point was reached on July 15. A micrometer survey was carried from here up the East Main river, 104 miles, to where the route to Nichikun leaves the main stream, and follows a small branch flowing in from the northward. The general course of the river for this distance is slightly north of east.

The stream is very rough and rapid, with sixteen portages past chutes and rapids, besides a number of places where lightened canoes were tracked up. The valley of the river is shallow, and often the stream flows almost on the level of the surrounding country. The average breadth of the river is 400 yards, and it is often quite shallow. Two large branches flow in on the south side, and one on the north side, together with a number of smaller streams.

Beyond where the Nichikun route turns off the main stream bends sharply to the south for some 20 miles; it then turns north-east, and enters a high range of hills that extend eastwards for over 100 miles. Among the hills the river splits into a number of branches, the discharges of many large lakes in that region. Along the river the country on both sides is low, with rounded hills of granite and gneiss, from 100 to 300 feet high. These hills run in ridges, east and west, parallel to the strike of the rocks. Beyond the sixtieth mile the hills become lower and the valleys wider, and they are occupied by sharp ridges of till, parallel to the direction of the glacial striæ (N. 85° W.).*

Above where the route leaves the river the country continues comparatively flat, towards the south and east, to the base of the mountains some 30 miles away. The trees along the East Main river are small, and do not average more than 8 inches in diameter. Black spruce is most abundant, and is found along with larch, Banksian pine, balsam spruce, and straggling white birch and aspen poplar. The highest hills, where unburnt, are wooded to their summits, and the only barrens are those caused by fire. More than half of the country has been burnt over, leaving only the bare rock or trees of small second growth.

The rocks along the river are all Laurentian in age, and are represented by mica schists and gneisses, along with large masses of hornblende granite.

The glacial striæ are well marked on all rock exposures along the river; their direction is constant, showing the ice-movement to have been from S. 85° E., or towards Hudson's Bay. Boulders in great numbers are scattered indiscriminately over hill and valley, and are often found perched on the very summits of the rocky hills.

The branch by which the Nichikun route leaves the main river is very small, and for 30 miles its general course is from east-north-east. It is then left by a portage route that passes for 25 miles in a north-east direction, through five irregular lakes on various small branches of the river, with portages between, to the height of land between the East Main and the Big river, which also empties into Hudson's Bay. Great trouble was experienced in finding the route through these lakes, as they were marked like a string of beads on the map obtained at Mistassini. The character of the country and trees between the main stream and the watershed is similar to that already described.

* Bearings throughout are all astronomical.

The water in the lakes is remarkably clear and cold, and they are all abundantly stocked with white fish, lake and brook trout, carp, and pike.

At the height of land a portage is made to a lake 5 miles long, which discharges into the Big river. The Big river below this point alternates between lake expansions and narrows. At the narrows, where it has a current of 5 miles an hour, it is quite deep, and is about 200 feet wide. It comes from the southward, where it rises in a number of lakes on the northern slopes of the mountains about 60 miles distant.

Ten miles down the river enters a large lake, and almost immediately passes out again into another lake, and then, by a short rapid, enters Lake Nichikun. The Hudson's Bay post is situated on an island near the entrance of the river, where we arrived on August 4.

The establishment consists of some half-dozen buildings of small logs covered with boards cut with a pit saw, which is also used to make the boards used for the interior finishings. The buildings are each about 12 feet square, and comprise a master's house and kitchen, men's houses, and various storehouses. Only thirteen families of Indians are attached to this post, and, together with the twenty-five families of Mistassini, include all the Indians who trade in the interior. These do not represent half of the Indians that inhabit the interior of Labrador, as the greater number of them prefer to journey with their furs to the coast, where the trade prices are much higher.

Lake Nichikun is about 30 miles long, and in its widest part about 5 miles across. It has a number of deep bays, and its extent cannot be appreciated, on account of the many islands scattered over its surface. The lake is surrounded by granite hills from 300 to 600 feet high, with their higher summits barren.

About Nichikun black spruce is abundant, and the largest trees will square 6 inches for 12 feet. Next in abundance comes larch, followed by balsam spruce. White spruce, Banksian pine, and white birch are not common; and aspen poplar and mountain ash are very rare.

At the Hudson's Bay post a manuscript map was obtained, showing Lake Nichikun and the various rivers and lakes of the northern, western, and southern watersheds of Labrador. This map was made here in 1842 by Thomas Beads and John Spencer, and it proves a valuable addition to the topography of the interior.

Through the kindness of Mr. Jos. Iserhoff, who is in charge of the post, much valuable information was obtained from the Indians concerning the geography and natural history of this region. Nichikun was left on August 7. The outfit was now carried in two cedar and a small bark canoe paddled by two old Indians, who were engaged as guides to Lake Kaniapiskau. This lake lies about 80 miles to the north-east of Lake Nichikun. The route leaves that lake by the middle of its three discharges, and follows down the main stream 25 miles.

It then turns more eastward, and ascends a small branch for 30 miles, passing through a chain of lakes on that stream. Crossing a narrow height of land, a small stream is descended through two small lakes into a large lake; and Kaniapiskau lake is reached by a short portage from the east bay of the last lake, which discharges into the great lake some miles to the northward.

The country between Nichikun and Kaniapiskau is higher and more rocky than any previously passed through, and as the greater part of it is burnt, leaving bare rock thickly strewn with boulders, the region has a very barren, desolate aspect. The tops of the highest granite hills are barren, and the trees in the valleys are small black spruce and larch, with very few straggling white birch.

Lake Kaniapiskau is upwards of 40 miles long from north to south, and is divided into two parts by a narrows close to the base of a barren, cone-shaped hill, from which the lake takes its name. A large stream flows into the south end of the lake, and is said to rise in Fox lake to the southward, out of which a tributary of the Manikugan river also flows southward into the St. Lawrence. The shore-line of Kaniapiskau is very irregular, being deeply indented with bays. Islands are numerous in the southern half, especially along the east side, where the land is comparatively low. There are two outlets to the lake, that join 5 miles below, where the river is a quarter of a mile wide, with a rapid current and shallow channel full of large boulders.

Our guides left us at the discharge, and in consequence the two remaining canoes were very heavily loaded. In running the second rapid of the Kaniapiskau branch of the Koksoak river, a short distance below the lake, one of the canoes struck on a rock and upset. By this accident we lost all our meat except 80 lbs. of rotten bacon, along with many other articles of provision and equipment, and made the remainder of the journey under considerable disadvantage, besides losing a day to repair the canoe and dry the outfit saved.

For 50 miles below Lake Kaniapiskau the river flows north-west. It here has no distinct valley, and runs nearly on the level of the surrounding country, and consists of a succession of lake expansions connected by short rapids, falling over masses of boulders. The surrounding country is low and comparatively flat, with rounded ridges of hills at intervals. Towards the lower end of this course the river begins a long descent, with heavy rapids and small chutes.

Turning abruptly to the east, it enters a narrow valley bounded by almost perpendicular hills of granite, at first about 200 feet high, but rising to 400 or 500 feet, as the river descends in a continuous heavy rapid for over 10 miles, where it varies in width from 100 to 200 yards. The rocky banks are covered with tightly packed boulders, from 30 to 60 feet above low-water mark, showing the height to which

the water and ice rise in the spring. For 20 miles below there is a succession of rapids with smooth water between, where the river widens to half a mile and becomes very shallow. The hills continue to rise, and along the lower part are often 600 or 700 feet high, while the bottom of the valley is fully 200 feet below the general level. The upper parts of the higher hills are barren, and the trees in the valley are very small black spruce and larch. The glacial striæ about Kaniapiskau show the ice-movement to have been from S. 20° E., or down the slope towards Ungava bay, and this northern direction was noted in many places along the river below.

Turning now to the northward, the river continues in that direction 50 miles. The surrounding country gradually lowers, until the river is only slightly below its level. Passing a large branch from the south-east called Sandy river, the river falls over a number of granite ledges, and, contracting as it descends, finally falls through a shallow gorge about 50 feet wide and a quarter of a mile long. Two miles below it again contracts, and passes into a crooked cañon about 300 feet deep and 100 feet wide, with overhanging walls. Here in a mile the river falls nearly 350 feet, and at the lower end of the gorge it is over 200 feet below the general level. Below this fall the river for 5 miles is narrow and has a very swift current; but after passing another large tributary, flowing in from the south-east, called Good-wood river, it widens to nearly half a mile, and again becomes a succession of shallow rapids, with short smooth intervals between, for 70 miles. Descending a fall of 80 feet, the river again contracts to about 100 yards, and for nearly 20 miles flows with a strong current in a narrow crooked valley, with perpendicular rocky walls rising in places 1000 feet above the stream.

Issuing from this valley, the river widens out and becomes very shallow for 10 miles, when a large branch from the westward, called Death river, is passed, and the river enters a long lake from 2 to 4 miles wide, surrounded by sharp rugged mountains, often upwards of 1000 feet high. This lake is named Cambrian lake, and is over 25 miles long, and gradually contracts into a river at its lower end, where another large branch, called Ice-dam river, joins from the westward.

On this lake a series of sandstones, limestones, and shales, associated with irruptive rocks, replace the granites and gneisses previously passed through, and which do not again appear along the river to within 75 miles of its mouth. This new series of rocks is remarkable from the great quantities of associated iron ore, in the form of bedded silicious siderite, hæmatite, and magnetite. These ores often occur in great masses, and the exposures noted along the river-shore are estimated to hold millions of tons of iron. These rocks are met with along the river for 120 miles. Five miles below the lake the river falls 60 feet in a long chute. A large branch, called Swampy-bay river, comes in from the

eastward 5 miles below the chute, and is used by the Indians as a route to old Fort Nascaupee, on the head-waters of the Hamilton river.

The river now flows nearly north for 70 miles, to its junction with a very large stream from the westward, named Stillwater river, which, like all its other branches, is yet unsurveyed. Between the Swampy-bay and Stillwater branches, the river flows through a wide valley bounded by sharp hills, and varies in width from a quarter of a mile to two miles, the average being about half a mile. Eight miles above the mouth of Stillwater river there is a narrow gorge, cut out of the shales and limestone, about 2½ miles long, and less than 100 yards wide, through which the river rushes with heavy rapids. The only other obstructions to navigation, between the forks, are two falls of 60 and 80 feet, the former cut out of shales, the latter over broken ledges of flat limestone. Below the Stillwater branch the river widens to over a mile, has a swift current, and is very shallow, with numerous low bars. The valley is considerably wider, and the hills forming its walls run in sharp ridges from north to south. They slope gently towards the east, and have overhanging cliffs facing the opposite direction. Their height gradually lowers as the river is descended, from 800 feet to less than 500 feet, some 30 miles below the junction of the two main branches. At this distance the Laurentian gneisses are again encountered, and the hills continue to lower and spread out, leaving a wide, flat valley, through which the river flows rapidly. It continues quite shallow, and has many large, low islands of sand and shingle, while it varies in width from 2 to 4 miles, with low banks. About 5 miles above Fort Chimo the low rocky hills approach the river, and it is obstructed by several rocky islands, that extend to within 2 miles of the Hudson's Bay post. From there to its mouth, some 20 miles, the stream is from 1 to 2 miles wide, with high rocky banks.

The rise of tide at the mouth of the Koksoak river is about 40 feet, and its influence is felt to a rapid nearly 60 miles inland. Along the lower part of the river, the ebb and flow runs with a current from 6 to 7 miles an hour, and is a source of danger to navigation with any but steam craft. The trees along the middle river are much larger than about its head or mouth. White spruce trees 18 inches in diameter are not uncommon in the river bottom about Cambrian lake, and below it to the last falls. Balsam poplar is also met with along that part of the river, and the black spruce, larch, and white birch are all larger than any noted further up stream. Out of the valley and on the sides of the hills the trees are small, and the summits are barren. The tableland on both sides of the valley is also barren; small black spruce growing only around the lakes and in protected valleys. Below the Stillwater branch the trees again become very small, and the white spruce and birch thin out, leaving only black spruce and larch. About Fort Chimo these last grow only in protected valleys between the

low gneiss hills. The Leaf river, a stream that enters Ungava Bay from the westward, about 20 miles north of the mouth of the Koksoak river, marks the northern limit of trees; beyond that stream, nothing but small willows and Arctic plants are found.

Fort Chimo was reached on August 27, and our canoe trip of over 1200 miles across Labrador was accomplished. Of this distance 450 miles had been previously surveyed, leaving 750 miles for the season's work. Of this 104 miles were surveyed with a Rochon micrometer and large traversing compass, with frequent check observations with a sextant for latitude and variation of magnetic needle. The remainder of the distance was either measured with a Massey boat-log on the lakes, or with time-estimations, by Mr. Eaton, on the rivers. As the direction of this part of the survey was practically north and south, the frequent observations taken for latitude acted as an efficient check on the estimations; and these together afford a fairly accurate survey, as was found when the map was compiled.

The Hudson's Bay Company steamer *Eric* arrived from Churchill three days later, and passage was taken in her for Rigolet, on Hamilton Inlet. Fort Chimo was left on September 10; and George river, a large stream flowing into the south-east corner of Ungava Bay, was reached next day, and ascended some 20 miles to the Hudson's Bay post. This river is about a mile wide, and is bounded on both sides by rugged hills of granite, often 500 feet high, with only a few stunted trees of black spruce growing in low protected valleys. The next stopping-place was Nakvak, on the Atlantic coast. Here the coast is extremely rugged; the mountains of syenite rise in sharp peaks from 2000 to 4000 feet above the sea, and have their upper portions unglaciated.

Davis Inlet, on the same coast, was next visited, where the mountains are much lower, and are glaciated to their summits.

Rigolet, situated at the narrows 40 miles above the mouth of Hamilton Inlet, was reached on October 1. Arrangements were immediately made with Mr. Wilson, of the Hudson's Bay Company, to forward by boat our supplies for the coming year to Northwest river post, near the head of the inlet. We then proceeded in our canoes along the north shore of the inlet, and arrived at our winter quarters on October 13. The Indians were from here sent forward, with instructions to proceed as far up the Hamilton river as possible before the river became frozen over, and then to await until the ice was sufficiently strong to allow them to descend on it. They succeeded in ascending the river 120 miles, and returned to the post on December 30.

Mr. Eaton and myself remained during November and December at Northwest river, where Mr. Cotter kindly shared his bachelor quarters with us, and where we passed a pleasant and comfortable time, working up the surveys and notes of the past season. Late in December

I made a trip to Rigolet, with a dog-team, in search of men to assist in hauling loads of provisions inland, and returned with eight men on January 15. Four days later, under the command of Mr. Eaton, a party of seventeen men started inland, each hauling on a long narrow toboggan 200 lbs. of provisions, together with a share of the necessary camp outfit. The shortness of the daylight and the extreme cold rendered work at this season very difficult. Notwithstanding these drawbacks, Mr. Eaton succeeded in reaching the foot of the Gull rapids, 70 miles above the mouth of the river. Further progress was barred by the rough ice in the rapids, as yet not well covered by the small quantity of snow fallen. The provisions were safely stored here in a cache of logs, and the party returned to Northwest river, after an absence of twenty days.

While Mr. Eaton was away, I accompanied Mr. Wilson to Rigolet; and from there to Cartwright, located on Sandwich Bay, about 80 miles to the southward; and returned to Northwest river early in February.

Owing to the lack of snow, the final start inland was not made until March 6, when, assisted by extra men, making a total of sixteen persons, we again left, each man hauling a load of 200 lbs. on a small sled 7 feet long, and shod with hoop-iron. Mr. Cotter accompanied us with his dog-team as far as Gull rapids, and materially assisted in the transport.

Above the câche considerable difficulty was encountered in passing the heavy masses of ice, that filled the river from shore to shore for nearly 10 miles. Beyond this the travelling was very good to within 20 miles of Lake Winokapau, where the valley narrows, and the current is so rapid that the stream never freezes over.

Slow progress was made along the narrow sloping margin of ice near the water's edge for 10 miles, until further travel with sleds became impossible. The loads were stored in another câche here, and the party returned to the lower one, for the remainder of the provisions left there. On the way up, the canoes were taken out of winter quarters about 10 miles below the upper câche, and drawn on sleds to that point. The provisions, outfit, and sleds were loaded into the canoes, and they were then poled and tracked up the remaining 10 miles to the lake. This proved a disagreeable and dangerous undertaking, as the temperature of the air was from 5° to 10° below zero, and the river was full of anchor ice. The men, working in the canoes, were able to grip the ice-covered poles only with their bare hands, and were all more or less frost-bitten.

Lake Winokapau was reached on March 30; and it was then decided to discharge the extra men, and to depend upon the permanent party of six to continue the transportation. The loads were increased to between 300 and 400 lbs.; but such was the quantity of provisions and outfit,

that at first four, and subsequently three loads each were necessary to move it.

The mode of travel until May 19 was as follows: from camp a load would be taken ahead from 12 to 15 miles, and there secured on the bank of the river, after which the party would return to camp. Another load would be brought forward to the same place next day; and so on, until the load containing the camp equipment only remained, when a move ahead would be made, and the camp established some 12 or 15 miles above the provisions. These would be brought to the camp and then transported ahead in the same manner. These trips backward and forward, together with those below Lake Winokapau, made a total of over 1200 miles' travel on foot, more than half of which was accomplished while hauling loads. Mr. Eaton and myself, besides assisting in the transport, carried a micrometer survey upwards from the mouth of the river to the Grand falls.

Hamilton Inlet is the largest of the many long, narrow bays or fiords that indent the Atlantic coast of Labrador. Its greatest length is slightly over 150 miles from east-north-east to west-south-west, and its average width is 12 miles. Forty miles from its mouth it narrows to less than 2 miles, and divides into two bays, of which the southern is the longest. The narrows is about 6 miles long, and above the bay again widens out, and varies from 4 to 16 miles. The country surrounding the inlet is high and rocky, especially along the south shore, where a range of barren hills, called the Mealy mountains, rise abruptly from 800 to 1200 feet above the bay.

Three large rivers flow into the head of the inlet. The Northwest river comes in on the north side, some 15 miles from the head of the bay. At its mouth this stream is upwards of 100 yards wide, with a strong current and a deep channel. It flows through a long lake near its entrance to the inlet, and rises in Lake Michikamau, some 250 miles to the north-west. Almost opposite the mouth of the Northwest river, another large stream empties into the inlet from the south-west. It is called the Kenamau river, and flows down from the tableland with continuous shallow rapids, that render it quite unnavigable. The Hamilton river empties into the head of the inlet, and occupies a wide valley, apparently the continuation of that of the bay. This is the most important and largest river of the eastern watershed of Labrador. Its drainage basin extends westward, almost halfway across the peninsula, and has a breadth of upwards of 200 miles.

Owing to the great difference in physical character, the river is naturally divided into two parts at the Grand falls, some 250 miles inland.

The lower portion flows in a distinct valley, cut out of gneisses and granites, where the river, at present, is from 500 to 1000 feet below the general level of the surrounding country. Above the Grand falls the

river flows on the surface of the tableland, and there descends into the valley with a sudden drop. From its mouth to the junction of the Minipi river, 80 miles up, the general course of the river is west-south-west. The hills forming the walls of the valley are from 3 to 4 miles apart, for 60 miles from its mouth.

The valley is partly filled with sandy drift, out of which the river has cut a shallow channel nearly a mile across, except at the Muskrat falls, 27 miles above its mouth, and at two rapids further up. The Muskrat falls have the form of a low chute, a quarter of a mile long, with a total drop of 70 feet. This is the only place, below the Grand falls, where rock in place is seen in the river-bottom. The banks of the stream are always sandy, and are often high and steep, with terraces cut into the drift at different levels, up to 200 feet above that of the river at present.

The trees along this part of the river-valley are large for a situation so far north. White spruce 2 feet in diameter and 70 feet tall are not uncommon; and black spruce trees, though not so large, are of sufficient size to afford good commercial timber. Balsam spruce, white birch, and both aspen and balsam poplar, are all common, and grow to 15 inches in diameter.

At the Gull rapids, 60 miles up, the valley is less than half a mile across, with almost perpendicular walls that rise from 400 to 800 feet directly from the river. The channel varies from 100 to 400 yards in width, and for 19 miles is occupied by continuous rapids.

The Minipi river pours in with heavy rapids, through a narrow valley at the head of this stretch. It discharges a considerable volume of water, gathered from a number of large lakes on the tableland to the south-west of its mouth.

From the Minipi river to the Grand falls the general course of the main valley is west-north-west. Above this branch the valley of the main stream again opens up, and the hills, for upwards of 25 miles, are from 1 to 2 miles apart. The channel along this part varies in width from a quarter to half a mile, and only in a few places is the stream broken by small rapids.

The surrounding country, from near the Gull rapids to beyond the Grand falls, has been traversed by numerous fires, the last of which burned throughout the summer of 1893, sweeping away the forests in the valley and on the tableland on both sides, and leaving only bare sand and rock, or small second-growth trees.

Beyond this stretch of quiet water the hills once more approach, narrowing the valley to less than a mile. Several sharp bends in the direction of the valley occur in the next 30 miles, where in places it is less than a quarter of a mile across, with its rocky walls rising directly from the narrow shores. The hills are nearly all bare and rocky; and at the upper end, where the river flows out of Lake Winokapau, they

rise in vertical cliffs 1000 feet above the water. As the river is ascended it becomes narrower, with increasing current, so that the last 6 miles to the lake is a continuous rapid, with three heavy pitches.

Lake Winokapau fills an expansion of the river-valley from 1 to 2 miles wide and 35 miles long. The water of the lake is remarkably deep, and two soundings, taken about halfway up in the middle, gave 406 feet and 417 feet. On account of the thickness of the ice (4 feet 9 inches), no other soundings were made. This great depth is taken to represent the level of the valley previous to the Glacial period, during which period the river-valley was everywhere blocked with drift, except along the portion occupied by the lake, where, from some cause unknown, no deposit of glacial drift was laid down. At the head of the lake a little branch, called the Elizabeth river, joins from the westward. At its mouth a small Hudson's Bay post was formerly situated. Above the lake, for 35 miles, to the foot of the portage route past the Grand falls, the character of the river and valley remain unchanged. The latter has a number of gentle bends, and varies from half a mile to a mile in width, with the river-channel filling about half of its bottom, where the river flows between banks of drift with a steady current of about 3 miles an hour.

Above the portage the valley quickly narrows to less than a quarter of a mile, and is full of sharp bends. Down it the river rushes in a continuous rapid for 9 miles, from the mouth of Bodwoin cañon, where the main stream pours into the valley from a narrow gorge on its north side. The valley above the cañon continues on towards the north-west.

Above the forks it is occupied by a stream having less than one quarter the volume of the river that issues from the gorge. The smaller stream flows from the westward, out of Lake Ossokmanowan, which also has another outlet into the main river. Eight miles in a straight line north-north-west of the mouth of the cañon, the main branch of the Hamilton river issues from a small lake expansion, almost on a level with the surface of the surrounding tableland, and commences the greatest and wildest descent of any river in Eastern America. The lake is 1660 feet above sea-level, and the valley at the mouth of the gorge is 900 feet above the sea; consequently, in 12 miles the river falls 760 feet.

The volume of water passing down is great, and is estimated to average 50,000 cubic feet per second. From the lake, for 4 miles, the river rushes along in a shallow channel, filled with boulders that break the water into heavy rapids, with a total fall of 95 feet. In the next mile it descends 110 feet, in a narrow trough cut out of solid granite, with steep sloping walls, down which the river pours in a tremendous rapid. As it descends, its width decreases from 150 to less than 50 yards; and in the last 300 yards, where the grade is very steep, the waters rush along with a deafening roar, in a white swirling mass, thrown into great long

waves that are at least 20 feet from crest to hollow. With a final huge pent-up wave, the great mass of water is shot down a steep incline of rock for 100 feet, where it breaks into a mass of foam, and then falls freely into a circular basin, 300 feet below the crest of the fall. The momentum acquired in the descent of the incline is sufficient to carry the water well out from the foot of the vertical wall of rock at the bottom. The Indians believe that the space so made is the abode of the spirits of two Indian maidens, who were accidentally carried over the falls. On this account, or more probably because of the awe inspired by the grandeur of the surroundings, and the enormous power displayed in the rush of water and the thunderous roar, the Indians who hunt in the vicinity cannot be induced to visit either the falls or the cañon below.

The basin into which the river precipitates itself is nearly circular, and about 200 yards in diameter. It is surrounded by perpendicular rocky walls 500 feet high, except where the river enters and flows out. At the time of our first visit (May 1), these vertical walls were completely hidden under a thick coating of ice, formed from the condensation of the great column of spray that rises high above the level of the top of the falls. The lower half of this ice-covering was in the form of gigantic icicles, presenting in the sunlight a beautiful display of iridescent colour, through shades of blue, green, and yellow, that contrasted strongly with the dead white of the upper portion. At the head of the falls a small bottle was found containing records of the visits of Messrs. Cary and Cole, and Bryant and Kenaston, who ascended the river in 1891.

The river leaves the basin by a narrow cañon at right angles to the falls. This cañon is less than 100 yards wide at the top, and has almost vertical rocky walls. It runs in a zigzag manner for 6 miles, until it ends in the main valley. Along its bottom, 500 feet below the surface of the surrounding country, the river, less than 100 feet wide, rushes with a continuous rapid, and falls 260 feet while passing through the canŏn.

The portage route past the falls leaves the valley on its north side, and in a quarter of a mile rises 700 feet, where it ascends the steep wall of the valley. It then continues 2 miles, to the first of a chain of small lakes, connected by twelve portages, that lead to the lake expansion of the river above the falls. Great difficulty was experienced in the ascent of the steep hill with the provisions, sleds, canoes, and outfit, as at the time it was covered with ice and slush, rendering it, in places, almost impassable.

Sled-travel was abandoned on May 19, owing to the rotten state of the ice on the smaller lakes; and, having established a camp on the banks of one of them, we waited there until the 27th, when work was resumed in canoes. This at first was exceedingly dangerous in the main river,

where the thick blocks of ice from the lakes above ran freely until June 5. Besides the large blocks, the water was covered with sharp needles of ice from 2 to 3 feet long, which, unless great care was taken, would have quickly penetrated our thin canoes advancing against the strong current. The ice was jammed in several rapids, past which portages were made. In two places the ice moved down the rapid while we were making the portage, and we had a lively time getting canoes and outfit away from danger over the moving mass.

Our ascent of the river at this time was due to an appointment made with an Indian, whom we had previously met, and who had agreed to meet us at the second lake of the river on June 1.

Above the Grand falls the character of the river changes completely; it no longer has a distinct valley cut deep into the surrounding country, but flows nearly on a level with the surface of the plateau, where it spreads out and fills the depressions between the low ridges of rock or drift that are arranged in echelon over the country. In passing around the ridges, the river is often broken into several channels by large islands, and in other places, where the valleys are wide, it forms long island-covered lakes, with deep narrow bays. The river is so broken into channels and lakes, that it is next to impossible to follow the main channel without a guide.

The current no longer flows steadily, but alternates between short rapids and long lake stretches. The general course of the stream is parallel to the ridges and the glacial striæ (west-north-west) from the falls to Lake Petitsickapau, 100 miles above. All these features give to the upper portion of the river an aspect of newness, and show its present course and conditions to have been determined by the post-Glacial configuration of the tableland. From the end of the portage-route to Sandgirt lake, 45 miles above, the river passes through two small lakes, connected by stretches of rapids, where many islands divide it into a labyrinth of channels. The surrounding country has been largely burnt over, leaving many barren areas. The standing trees are very small and stunted, and, except close to the river, grow in open glades. Black spruce everywhere predominates, with larch balsam spruce, and white birch growing in favourable places.

Sandgirt lake owes its importance to its situation, rather than to its size, as it is only 12 miles long and 8 miles wide. The river here divides into two main branches: the Ashwanipi branch, flowing in from the north-west; and the Attikonak branch, from the south. Beside the routes by these streams, another from Lake Michikamau to the north-east centres here. A number of families of Indians congregate here in the spring, to await the breaking up of the ice, after which they descend in a body to Mingan, on the Gulf of St. Lawrence, where they trade their furs.

Owing to the necessity of making two loads against the strong

spring freshets, our progress to this place was slow, and we did not arrive until June 15. On account of its favourable situation for exploration in various directions, a câche was constructed on one of the islands in the lake, where all extra supplies and outfit were stored.

The survey was then carried up the Ashwanipi branch, for the accomplishment of which a month's time and provisions were allowed. This stream is the larger of the two branches, and varies from 200 to 500 yards in width, as it flows swiftly along for 30 miles from where it issues out of Birch lake. The surrounding country is very similar to that already described. From Birch lake upwards, the aspect of the country alters, on account of a change in the underlying rocks.

The iron-bearing series, previously met with along the Koksoak river, now replace the gneisses, and continue westward beyond the bounds of this exploration. Sharp parallel ridges of rock, with irregular outlines, now rise from 300 to 700 feet above the general level, and are separated from one another by wide, flat valleys. The upper parts of these ridges are treeless, and are covered only in part with white lichens or small shrubs, including the northern cranberry (*Vaccinium vitis-idæa*), which grows everywhere in profusion through the barrens. It is an important article of food, owing to the lasting quality of its fruit, and its improvement by frost, so that it continues excellent until late in the summer.

From the summit of any ridge, a fine view of the surrounding country is obtained. The wide valleys between the ridges are almost wholly occupied by long irregular lakes, covered with islands, and broken into deep bays by low ridges of drift. These lakes are joined together by a network of streams, so that canoe-travel is possible in any direction when the country is known. Otherwise much time is lost going up the wrong bays and channels, as was the case with ourselves, when looking for the main stream in the lakes immediately above Birch lake, where ten days were spent in useless search before the stream was finally found.

The change of rock is accompanied by a marked improvement in the size of the trees, due to the increased richness of the soil. White spruce 30 inches in diameter and 40 feet tall are common in the river-valley, where they grow along with black spruce 2 feet in diameter. Balsam spruce and larch are also abundant, together with white birch and a few clumps of balsam poplar. The extreme cold of winter, and the cold northern winds at all seasons, have greatly stunted the growth of the trees, and their height does not correspond with their girth.

Among the small fruits found in this portion of the interior may be mentioned two species of red currants (*Ribes rubrum* and *R. prostratum*) abundant everywhere; the common raspberry (*Rubus strigosum*) and the arctic raspberry (*Rubus Arcticus*); the wild strawberry (*Frigaria Virginiana*) is not plentiful; two kinds of blueberries (*Vaccinium uliginosum*

and *V. Pennsylvanicum*) grow in profusion everywhere; the wild cherry (*Prunus Pennsylvanicus*) is commonly found growing on old burnt land, along with two varieties of *Amalanchier Canadensis*, which also grow in the wooded areas.

Above Birch lake, which is 10 miles long, the river is divided into three channels, that unite again 12 miles above, in the next or Dyke lake. This is the lowest of a network of large lakes connected by short rapids. At its north-west end, 20 miles above its outlets, a small, deep narrows, mistaken by us for the main stream, leads into Lake Petitsick-apau, where the Hudson's Bay Company formerly had an outpost called Fort Nascaupi. The ruins are still to be seen on the shore of the lake. This lake is 25 miles long, and 10 miles across in its widest part. It is exceedingly shallow, and is divided into four deep bays at the north-west end. Only a narrow ridge separates it from Attika-magen lake, at the head of the George river, emptying into Ungava Bay.

The inlet of the main stream is on the south side of Dyke lake, near its north-west end, where a short rapid connects it with the next long lake above, whose inlet is at its south end, opposite the outlet.

There is here another short and strong rapid connecting with the next lake. The inlet of this lake is 15 miles to the southward, where another short rapid from the west leads to another long lake, separated from the last only by a narrow ridge. This lake was followed in a north-west direction for 12 miles to its end, where the river enters, after passing down 5 miles of rapids from Menihek lake. This portion of the route, like the description of it, was very bewildering, especially as we were always looking for the river in the northern bays of the lakes; and not until they were thoroughly explored did we think of searching in the opposite direction, or almost doubling on our former course.

Menihek lake is another of these long narrow lakes, and varies from 1 to 2 miles in width. From its outlet due south to where the river flows in its length is 50 miles. A high barren ridge of hills bounds its west side.

The southern end of the lake marks the change from the iron-bearing series of rocks to the gneisses, and the country surrounding the river above it again corresponds to that below Birch lake.

The river for 24 miles, to where the survey ended, has a strong current, with frequent rapids, being there 75 yards wide and 6 feet deep. About 50 miles above the end of the exploration, it flows out of Lake Ashwanipi, a large irregular body of water, upwards of 50 miles long, situated just north of the watershed dividing the Hamilton river from the streams flowing southward into the Gulf of St. Lawrence.

The survey was not carried to the head of this lake, owing to the time lost in search of the river below, and the consequent lack of both time and provisions to complete the work in such a large irregular lake

as Ashwanipi was known to be. After marking the end of survey, we returned down-stream and reached Sandgirt lake on July 18. Before leaving this part of the river, attention must be again drawn to the immense amount of rich iron ore seen about the shores of the lakes, which can only be estimated by millions of tons.

Another important item of unexhaustible wealth is that of the fisheries of the lakes and river, and the remarks on this subject apply to all the waters of the interior of Labrador. The river stretches swarm with brook trout, from 3 to 6 lbs. in weight, and afford as fine fishing as can be found in Canada. Along with the trout are numbers of land-locked salmon, from 1 to 5 lbs. in weight, together with large white fish, pike, and two species of carp. In the lakes all these kinds are taken, along with lake trout up to 40 lbs. in weight, and, if the Indians are to be believed, often to twice that weight.

The next exploration from Sandgirt lake was in a north-east direction, 65 miles to Lake Michikamau. We started on this trip with supplies for twenty days; but, owing to favourable weather, we returned on July 30.

The route to Michikamau leaves Sandgirt Lake by its northern discharge, which is descended a few miles to Lob-stick lake, a large body of water with several deep bays. Passing to its eastern end, a small stream was ascended a short distance into a large lake dotted over with myriads of small rocky islands, with a second similar lake beyond, from which a portage leads to the water flowing into Lake Michikamau.

As an example of the intimate connection between the head-waters of the various rivers of Central Labrador, it may be mentioned that the valley along which the portage passes is occupied by a small lake, that discharges either northward into Lake Michikamau, or southward into the Hamilton river, according to the direction of the wind. When Lake Michikamau is above its normal level, in the spring, a large stream carries part of the overflow into the Hamilton river by this valley, and no portage is then necessary to pass from the Hamilton to the Northwest river.

From the portage, the route passes east for 15 miles; the first half is through a lake, followed by a short stretch of river, into a long narrow bay of Lake Michikamau. This, the "Grand Lake" of the Indians of Eastern Labrador, is well worthy of its name. It is 70 miles long, and 20 miles across in the widest part, with an average width of 10 miles. Its longest axis extends from south-east to north-west. While Michikamau is considerably shorter than Mistassini, its expanse is not dwarfed by large islands and long points like the latter; and the high rocky hills that surround it add much to the beauty of the lake, and contrast favourably with the low shore-line of Mistassini.

The country about the lake and along the route is very similar in character to that already described, except that the ridges of drift are

wanting over many areas, and, in consequence, the low rounded hills of gneiss are more marked.

Lake Michikamau is on the limits of the continuous forest belt. To the northward of it, stunted spruce and larch grow only in protected valleys, around the margin of lakes and watercourses. The remainder of the surface is either bare rock strewn with boulders, or else covered with dwarfed willows and shrubs, or white lichens, giving the landscape a naked and uninviting appearance.

The Northwest river flows out of Lake Michikamau on its north side, about 30 miles from its north-west end.

Returning to Sandgirt lake, the câche was emptied, and a final start was made on August 1, up the Attikonak branch. This stream flows out of a large lake of the same name, some 75 miles to the south-south-east of where it joins the main stream. Its volume, where it enters Sandgirt lake, is about one-half that of the Ashwanipi branch at the same place. The river has a strong current, with numerous rapids, for 11 miles, to its outlet from a long narrow body of water 45 miles long, called Lake Ossokmanowan. This lake has a second outlet on the east side, whose volume is about equal to the branch ascended. The second outlet passes eastward down the main valley, and joins the main stream at the mouth of Bodwoin cañon. South of Lake Ossokmanowan for 26 miles, to Lake Attikonak, the river flows with rapid current, except where it passes 5 miles through a lake.

Lake Attikonak is another of those large, irregular bodies of water that cover more than one-third of the surface of the interior tableland. Its appearance is dwarfed by the number of islands that dot its surface in all directions. From its outlet to the head of its south-east bay, the distance is 36 miles. A short portage route leads from this bay to the Romaine river, which flows southward into the Gulf of St. Lawrence. Where the route joins it, this stream is less than 100 yards wide; and a short distance below enters, and for 35 miles passes through, four lakes, connected by short rapids. These are called the Burnt lakes, and derive their name from the total destruction by fire of the forests surrounding them. From Sandgirt lake to the outlet of the lowest Burnt lake, the country is low and rolling like that already described.

Below the lakes the river assumes its proper character, and flows swiftly down a valley from half a mile to two miles wide, with steep granite walls that rise from 300 to 800 feet above the surface of the stream. The valley has been partly filled with drift, out of which the river-channel is cut, the former levels of the river being marked by the terraces that are now seen at different elevations up to 100 feet above the surface of the water.

The river was followed downward 45 miles, to where it takes a sudden bend to the eastward, and soon passes into a narrow gorge between high rugged hills of gabbro. In this gorge it falls with continuous

heavy rapids, and is quite impassable with canoes. If such were not the case, the Indians would never use the portage route that leads from the Romaine to the St. John river. This route follows a number of small lakes and streams in deep, narrow valleys between rugged hills of gabbro, that rise nearly 3000 feet above sea-level, or considerably higher than the general level of the interior tableland. The total length of the route is 65 miles, with thirty-one portages, in all 19½ miles long, and together forming the longest and worst portage route in any part of Eastern America.

Before reaching the St. John river, the general level of the country falls more than 1500 feet. This river has a valley from half a mile to two miles wide, with steep rocky walls. Down the valley the river flows rapidly as it winds from side to side, and is only broken by one small fall until it empties into the Gulf of St. Lawrence, about 40 miles below where the portage route joins it.

We arrived at the mouth of the river on August 22, after an absence of nearly six months from any base of supplies, during which 906 miles of micrometer survey and 280 miles of track surveys were made. These surveys have since been mapped, and the manner in which they tie with previous surveys reflect great credit on Mr. Eaton, to whose careful work the accuracy is due.

The practical and scientific results of the exploration, beyond the additions to the geographical knowledge, may be summed up as follows: All the exposures of rock along the various routes were examined, and a large quantity of information was obtained in regard to the relations of the various rocks that make up the Archean complex, which occupies over nine-tenths of the area of Labrador. A great area of supposed Cambrian rock, which can be correlated with the iron-bearing rocks of Lake Superior, was discovered extending from latitude 50° north-westward to, probably, beyond the west side of Ungava Bay. Many interesting facts were gathered in regard to the ancient configuration of this great area, along with others relating to the glacial phenomena. Among these may be mentioned the evidence of a confluent ice-cap over Labrador, except on the highlands along its north-east coast, and that the movement of the ice was everywhere outwards from the central interior towards the coast.

Large collections of rocks, minerals, plants, birds, birds'-eggs, and insects were brought home. These, in conjunction with the notes taken, will add greatly to the knowledge of the natural history, and the distribution of life, animals, and plants, in these regions.

Meteorological observations were regularly kept, together with notes on the thickness of ice, snowfall, and other subjects bearing upon the climate. About 250 photographs were taken to show the characteristic features of the country passed through, and other subjects of interest.

The elevations of different points along the routes have been partly

worked out from barometrical readings taken in conjunction with station barometers at Northwest river and on the island of Anticosti. The elevations already determined are marked in blue on the accompanying map.

A more detailed report on the country and its resources is being prepared for the Geological Survey of Canada, along with a map of the Labrador Peninsula, on a scale of 25 miles to an inch, which will allow the geographical features to be shown with greater completeness than is possible on the map to accompany this paper.

THE LUCHU ISLANDS AND THEIR INHABITANTS.*

By BASIL HALL CHAMBERLAIN, Emeritus Professor of Japanese and Philology in the Imperial University of Japan.

The Luchuan theatre is among the things which apparently no previous traveller had seen, and yet it has an interest of its own for the student of Far-Eastern culture, showing as it does something similar to what the Japanese stage was at an earlier period of its development. In fact, the present Luchuan dramatic performances stand in the position of a rustic first cousin to those mediæval Japanese lyrical dramas, called *Nō no Utai* and *Nō Kyōgen*, which I described and translated specimens of, some thirteen years ago, in a little work entitled 'The Classical Poetry of the Japanese.' The inner form of the "house" is sometimes the same—a square stage with seats for the audience round three sides of it, while to the left, at the back, a sort of gallery or bridge leads to the green-room. The chief difference is that the front of the stage has an upper storey with a window. Whereas the Japanese *Nō* theatre is patronized chiefly by the aristocracy, who alone can understand the obsolete poetic dialect in which the pieces are written, its Luchuan poor relation attracts the lower classes. The spectators squat on rather dirty matting, which is stretched anyhow on the uneven wooden boards, the back part being raised a little to enable those behind to see. People eat and smoke and come and go, and children play and cry, unmindful of the actors. Tickets for the whole day cost only three or four cents at the lower-class theatres, except in certain reserved places. The first time I went I could not gather any very definite impression from the mixture of much singing and dancing and little dialogue, except that the play was taken from the ancient native history, for the title was stuck up on a placard on the stage. But later on, a better occasion offered—a party to a theatre of higher standing, joined in by one of the young Luchuan princes and by the leaders of Nafa society, both native and Japanese. The thoughtful kindness of our host had supplied us

* Paper read at the Royal Geographical Society, January 7, 1895. Map, p. 408. Concluded from the May number.

foreigners (that is, the Japanese and me) with a Japanese version of the libretto, so that we could easily follow what went on. There were twenty pieces in all during the day. As before said, they reminded me of the Japanese lyric dramas and their comic interludes. In all the plot was simple, founded in the former class on some pretty little legend, and partaking in the latter of the nature of burlesque and practical joke. Some of the stories were familiar Japanese friends; for instance, that of 'The Elves and the Envious Neighbour,' so charmingly translated by Mitford in his 'Tales of Old Japan.' Others were original. Part of each play was sung by an invisible chorus, and invariably there was dancing. Sometimes the dancing was itself the *pièce de résistance*, and was very rhythmical and pretty, much of it posturing, none of it so rapid and violent as the ballet-dancing of Europe. As a rule, the dancers numbered four, or some multiple of four. The musical instruments used were the banjo, the flute, and the drum. These were really *played*, not deafeningly banged, as is the case on the Chinese stage; and the music seemed a degree nearer to that of Europe than either Chinese or Japanese music is. It was, however, monotonous enough, certain short phrases being repeated to satiety. What I have here called a "banjo" is known in Luchu as the *jamising*, and is covered with the skin of a large snake. From this Luchuan *jamising* the better-known Japanese *shamisen* was derived in the seventeenth century; but it is not impossible that the Luchuan instrument itself may be comparatively modern, and have been influenced *viâ* Fuchau by a Spanish or Portuguese original. The music played on the *jamisen* and *shamisen* is decidedly less Oriental in character than that performed on other Luchuan and Japanese instruments.

With the Luchuans of the higher class, the composition of Chinese and Japanese verses is a favourite pastime, and as Japanese versifiers some of them attain to high excellence. Poetry in the native tongue is mostly left to the rustics, each Luchuan village cherishing certain stanzas that have been handed down in praise of the limpid stream, the monumental tree, the pure air, or whatever other special perfection may, in the patriotic conviction of the inhabitants, justify the claims of their particular home to be the fairest spot on earth. Besides these local patriotic poems, there are also, of course, love-songs in the vernacular—for what language could long exist without such? The favourite Luchuan stanza consists of four lines, whereof the first three have eight syllables, and the fourth has six syllables, an arrangement differing from any adopted by the poets of China or Japan.

Picnics form another favourite amusement of the upper and middle classes, as noticed long ago both by Basil Hall and by Perry. Horse-races of a primitive type are also in vogue. Besides these, there would seem to be those games of chequers, chess, and others, which are common to the whole Far-Eastern region, and, indeed, to the civilized world at

large; but such specially European games as billiards and cards, though now firmly domiciled in Japan (indeed, the Japanese soon learn to play billiards better than Englishmen do), have not yet invaded the little southern archipelago. Of children's sports, the only one I took much notice of was kite-flying.

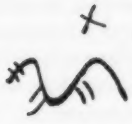
Every spare moment of my stay at Nafa was devoted to an earnest study of the language, and this it was which kept me so much tied to that city; for one of the two interpreters whom the Governor's kindness lent me for part of each day proved a most intelligent guide in this matter, and as such was not lightly to be parted from by one the chief object of whose visit was philological inquiry. The language had never been grammatically studied before. The only so-called helps were a very stilted Japanese-Luchuan conversation book published for use in the Government schools, and a short vocabulary by Lieut. Clifford appended to Captain Basil Hall's work;* the latter a fearful and wonderful production—mere "pidjin," in fact, and of no practical assistance. This is not the place to enter into details. Such will be published later on in a more appropriate place. Suffice it here to state that the Luchuan language proves to be related to Japanese in about the same degree as Italian is related to French. Though mutually quite unintelligible, and though there are considerable divergences both in the phonetic system and in the details of the grammar, the structure of the sentence is practically identical, as is the case with French and Italian, and a study of each language throws vivid light on the other. The verb, which is the most important part of speech in all languages of the Mongol type, retains archaic characteristics in Luchuan which had already disappeared from the earliest Japanese known to us—that of the eighth century after Christ. An unfortunate result of the political overshadowing of Luchu by its two great neighbours, China and Japan, has been the habit of using the Chinese and Japanese languages for literary purposes, almost to the exclusion of the native tongue, which neither the Chinese ideographs nor the Japanese syllabary are well fitted to express. The Luchuans have no perfect written system of their own. There existed, however, till recently, and perhaps still linger in the Further Isles, two rough methods of recording thought for certain practical purposes, of which no notice has hitherto reached Europe. One of these is the ideographic writing of the islands of Yonakuni. The following signs for common objects of barter are in use:—†

* Dr. McLeod's volume on Luchu gives the same in an abridged form.

† The small characters between the picture-writing and the English translation are a translation into Japanese.

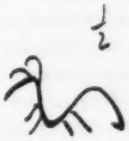
羊

Sheep



馬

horse



牛

cow

豚

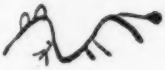
pig

魚

fish

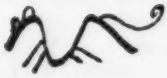
鳥

fowl



猫

cat



犬

dog

人參

Carrot

牛房

burdock

ラッキョ

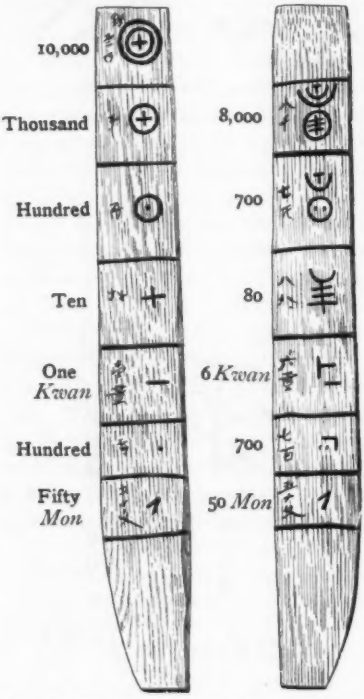
scallion

ヒル

garlic

The interest of these symbols to the student would be greatly enhanced if he felt himself justified in deeming them the result of really original thought. That the inhabitants of so remote an islet should, without assistance from the great world, have solved for themselves the problem of representing ideas to the eye, would be astonishing indeed. But we cannot with safety jump at such a conclusion. It is more natural to suppose that the islanders, though unable to read Chinese, had heard of the existence of the Chinese ideographs, and had even perhaps seen specimens of them, and that, the idea being thus suggested, they began to work it out practically for themselves. This is rendered probable both by what has happened in other parts of the world, where a vague knowledge of the European alphabet has produced native scripts somewhat resembling it, and by the form of one or two of the Yonakuni ideographs themselves, especially that for person 乂, which recalls the Chinese 人. Numbers were indicated in an original manner. For instance, whereas a rough circle meant "one egg" or "eggs" in general, as figured above, "ten eggs" was written ⊖, and "twenty eggs" ⊗.

The other kind of writing peculiar to Luchu, and known as *Shō-chū-ma*, had a wider importance. It was current in the rural districts of Great Luchu and in the Further Isles, especially Miyako-jima, among those incapable of writing the Chinese character. The figures composing it used to be inscribed with charcoal or any other available material on sticks, which served as local financial records, setting forth the amount and assessment of taxes and other kindred matters. Thus most of them represented numbers. I reserve for the *Journal of the Anthropological Institute* a detailed discussion of six specimens of *Shō-chū-ma* preserved in the Anthropological Institute of the Science College of the Imperial University of Japan, but am enabled meanwhile, through the kindness of the curator, Professor Tsuboi Shōgorō, to submit to the Royal Geographical Society a facsimile of one of them. The larger figures to the right are alone original, the smaller ones to the left being a Japanese (Chinese) interpretation added afterwards.



The system possesses, as will be observed, different forms for the numerals, according to the article counted. Thus "a hundred," as applied to the smaller money value called *mon*, is represented by a dot; but when a hundred of the larger denomination *kwan* has to be written, we find the dot surrounded by a circle. The most noticeable feature, however, is the mutilation of 十, "ten" (the current Chinese and Japanese ideograph for that number), to denote "five," which latter appears sometimes as 𠂉 (*i.e.* half ten), sometimes as 一 or 𠂇 (*i.e.* ten with one limb missing). The numbers between "five" and "ten" are formed by the addition of dots or lines to "five." The ideograph for "eight thousand *kwan*" exemplifies both these characteristics of the system, it being a compound of the ideograph for "myriad" cut in two, and of that for "thousand" increased by the change of one transverse line to three, that is, 8000 is represented by half ten thousand (*i.e.* 5000) + 3000. Similarly 700 is half a thousand (*i.e.* 500) + 200. Most of the specimens of *Shō-chū-ma* are larger than the one herewith presented, and are more fully inscribed. Some of the larger sticks have their four sides apportioned as follows:—one for the money account, one for the rice account, one for the firewood account, and the fourth for the name of the village, which latter is inscribed in Chinese characters. In these the name of each household liable to contribute is indicated by a peculiar mark of his own.

To end this part of the subject, it should be stated that the Luchuans are also credited with having used knotted cords (*quipos*) for keeping accounts in very ancient days. It is, of course, well known that their neighbours the Chinese did so.

While Great Luchu has been brought into close relations with Japan for nearly three centuries past, the Further Isles have remained much more isolated. The first time any of the natives reached Tokio was in December, 1893, when some of them came to present a petition to the Diet on some matter connected with taxation. Mr. Kada Tei-ichi's and Mr. Tashiro Yasusada's printed accounts of these islands show the manners of their inhabitants to be sufficiently similar to those of Great Luchu to warrant applying the same description to both, unless one were to go into very minute details—same food, same houses, same religion, same territorial divisions. A like remark applies to Oshima on the north, where the tattooing and peculiar coiffure of the women is as Luchuan in character as is the vegetation that stamps its *cachet* on the physical aspect of things. Note, however, the following peculiarities communicated to me by officials of long experience in the Further Isles. Owing to the luxuriant forests on some of these islands, the people there burn wood to cook their food with. Animal food, too, is more abundant, especially chickens. Much tobacco is grown there, Yaeyama alone having exported 40,000 lbs. in 1893. The women wear

a dress called *kakam*, somewhat resembling the *hakama*, or divided skirt of the Japanese, secured at the waist by a string which runs round it as in pyjama trousers. Above this they wear a sleeveless tunic. The females of the lower class are intrepid riders, sitting sideways on the saddle after the European fashion, a whip in one hand, and their marketings slung over the back in a basket. When a woman is pregnant, she occasionally eats dog's flesh. Immediately after delivery a fire is lighted in the room, however hot may be the weather, and both mother and infant are placed as close as possible to it for the space of a week. Also the friends and relations assemble, and make loud music all night and every night with drums and other instruments, so that the poor creatures cannot get a wink of sleep till daylight comes. It would seem that this barbarous custom was also formerly observed in Great Luchu, though it has now there fallen into desuetude. According to a most circumstantial account which I received from the Japanese Mayor of Shuri, infants on Yonakuni are carried on the mother's back in a sort of sling called *tsikumyā*, which is hung round the mother's neck as in the accompanying figure. My somewhat long-winded informant waxed quite eloquent over the advantages of this arrangement, which, according to him, deserved to be known and imitated not only in Japan, where women inappropriately carry their babies on their back and thus cannot suckle them, but all over the world. Strange to say, another friend, Mr. Tamura Kumaji, who has lived on the Further Isles for seven years, declares that no such custom has any existence! This is, however, the only Luchuan item as to which I have found authorities differ. The above few particulars concerning the Further Isles must suffice for the present. I only note them in case of my being prevented from carrying out a cherished plan of again visiting Luchu, and making a lengthened stay in each of the principal islands.

I found social life at Nafa and Shuri very pleasant. The upper classes there have not much to do; they read little, and move about little, so that they have plenty of time for entertaining each other. It so happened, also, that the Governor and the Chief Inspector of Police, who are the two principal officials of the archipelago, were leaving, and I shared in some of the entertainments that were given in their honour. I was sitting alone at my inn on the evening of March 11, when a message came from Prince Shōjun (or Matsuyama, as the Japanese commonly style him), third son of the ex-king, to say that he wished to see me. I went, accompanied by the Inspector of Police, to the place indicated—a tea-house in Nafa—and found the prince attended by two of his nobles named Ie and Tama-Gusiku. There was no formality about the conversation, which was carried on in Japanese, of which language the prince, who was partly educated at Tokio, is a perfect master. One of his attendants, too, spoke Japanese fluently; the other could only say a few

words. A good deal of the talk had reference to the visit of my grandfather, Captain Basil Hall, in 1816, of which a local record is still preserved. A day or two later I paid visits at the houses of my host and his attendants. The exterior of such Luchuan mansions is not striking, and the gate remains always inhospitably shut. Once within, however, the visitor finds himself in an atmosphere of courtesy nowise inferior to that of Japan. The disposition, too, of the apartments, with their mats and ornamental hanging scrolls, recalls Japan, and every one sits on the floor, *more japonico*. But a curious peculiarity is the presence in the court just outside the reception-rooms, which are of course open to the outer air in this delicious climate, of cages containing fighting cocks that keep up an unpleasant crowing. The charming female servants of Japan are absent, their place being taken by men, who, with deep obeisances, bring in tea and somewhat dubious cakes. Nowhere was a woman to be seen, though many were the heads of men and boys peering round corners and over screens as we passed in and out. After this there were many comings and goings, days spent together at the theatre, and so on. Our grandest field-day was one Sunday, when, after military games by the soldiers of the Japanese garrison who are quartered in the castle of Shuri, we—that is, the Prefect, the Chief Inspector of Police, the military Commandant, another officer, and I—were bidden to a grand feast in Japanese style by Prince Shōten (also called Naka-Gusiku from the name of his estate), the ex-king's eldest son, whom we found attended by his brother Shōjun and two or three of the principal nobles. Unfortunately our delicate, amiable-looking host, whom I took to be about thirty years of age, could speak no language but his own. So, as our Luchuan was neither copious nor fluent—indeed, the only word some of the party knew was *chura-kāgī*, which means "a pretty girl," and is generally among the first expressions new-comers to Luchu learn—all we could do was to smile and pledge each other in innumerable cups of *saké* (a Japanese liquor made from rice, and tasting rather like weak sherry). The younger prince, however, and some of the others were ready to chat away in the most unconventional manner; and the party went off right merrily, an æsthetic diversion in the middle of the proceedings being caused by the entrance of an artist, who drew in sepia whatever subject was proposed to him by the guests. There was also some composing of verses and writing of scrolls by the assembled company.

The perfectly Japanese character of this whole entertainment—food, conversation, manners, everything—might have led one to suppose that our Luchuan hosts knew of no other way of living. The only un-Japanese feature was that each of us was invited to partake of a thimbleful of a very strong Luchuan liquor out of a tiny cup of pure gold. Quite another vista, however, was opened out a few days later, when a charming old nobleman, named Yonabara, bade us to a feast in the Chinese style. No more squatting on the mats this time, but

stiff-backed chairs *à la chinoise*. No more of the familiar Japanese fish and rice and seaweed soup, but richer and more complicated Celestial dishes served in twelve courses with an elaborate *menu* in Chinese. This feast was intended to be an exact counterpart of that which it was the custom to offer to the Chinese ambassadors who used to come and present the congratulations of the court of Peking on the accession of each new Luchuan sovereign. Some of the robes then worn were brought out—gorgeous red and green silks. But as it was only play this time and not reality, our hosts did not don these robes themselves. Some extremely bewitching singing-girls were present to help on the feast with native music, and these the son of the house playfully dressed up in the gorgeous Chinese robes, producing a charming effect.

Two or three days after this dinner in Chinese ambassadorial style, the day of parting came, when the Prefect, the Chief Inspector of Police, several officers of the garrison, and myself embarked on board the steamer *Mutsu Maru*, that was to carry us home to Japan. Our late host presented us each with an ode in faultless classical Japanese. The lines addressed to myself ran as follows :—

Onozukara
Kami ya mamoran
Watatsumi no
Nami-ji mo kaze mo
Kimi no mani-mani.

Which, being interpreted, means—

Surely must
The Gods protect thee,
Inclining to thy behest
Both the breezes and the wave-path
Across the ocean.

The deck was crowded with friends come to say farewell; and as we rounded Nammin Point, this castle-like coral rock was seen to be alive with people waving adieux to us with their green parasols, after the peculiar Luchuan fashion. The last impression I received of Great Luchu was from its white, glistening grave-vaults on the green hill-sides. Then night fell, and in the brilliant moonlight island after island rose up in clear-cut outline as we sped rapidly northward over a sea of glass.

APPENDIX.

On the Name Luchu.

The etymology of the word *Luchu* is obscure, and so far as orthography is concerned, both native* and European spelling exhibits a remarkable variety of usage.

* The Chinese are responsible for the native spellings, their system of writing being authoritative in Luchu as in Japan.

Each of the combinations 流虬, 瑠求, 流求, 流球, 留求, 琉球, which give the same Chinese sound *Liu-K'iu*, or *Liu Ch'iu*, and even 流鬼 which sounds rather differently, has the authority of ancient and respectable authors. The earliest of these various forms, 流虬, which occurs in the Chinese annals of the seventh century, means literally "a floating hornless dragon," and is explained by reference to the likeness in shape of Luchu to a young dragon floating on the surface of the waves. The Chinese were quite capable of bestowing such a name on the archipelago or one of the islands composing it; and the identification of Luchu by the Japanese with the *Ryū-gū* 龍宮, that is, "Dragon Palace," or palace of the sea-god of their mythology, which is supposed to lie somewhere below the waves, points to a cognate idea. I incline to think, however, that all the combinations of characters employed to write the sound *Liu-K'iu*, or *Liu-ch'iu*, are but attempts to represent phonetically syllables whose original signification had been forgotten before the introduction of the art of writing. The name may possibly be a survival from days when a race different from that now dominant there tenanted the archipelago. One thing alone is clear, namely, that the word *Luchu* is not Luchuan. Neither is it Japanese; for the use of the letter *l* (with its equivalents *r* and *d*) at the beginning of a word is contrary to the phonetic rules of both these kindred tongues. The characters now generally adopted are 琉球, which the Luchuans pronounce *Duchu*, while the Japanese call them *Ryuky* . The standard English spellings, *Luchu*, *Lewchew*, or *Loochoo* come to us from the pronunciation current in North China—*Liu-ch'iu*, according to Sir Thomas Wade's system of transcription—while the French *Liou-Kiou* represents the pronunciation of South China (*Liu-k'iu*). Early Spanish and other voyagers wrote the word in an astounding variety of ways—*Lequeos*, *Lequio*, *Liquejo*, *Loqueo*, *Liu-Kiu*, *Lieou-Kieou*, to which later compilers have added *Lieuchieux*, *Lieukieu*, *Lewkew*, *Lutschu*, *Liow-tcheow*, *Lioe-kioe*, etc., until the student feels perfectly bewildered. All these spellings, however, widely as they may differ to the eye, can be traced to the fairly uniform pronunciation of Chinese interpreters. Here in Japan, during recent years, some Europeans of strong pro-Japanese leanings have adopted the Japanese pronunciation, and spell *Ryūkyū* or *Riukiu*. They have not even shrunk from the perpetration of such English and Latin (?) adjectives as *Riukiuan* and *Ryukyuanus*! For my own part, I fail to see the advantage of mixing up politics in such matters, and I adhere to the spellings *Loochoo* or *Luchu*, not as being the best imaginable if we now had to write of the place for the first time, but because they are those which have been most generally employed by English writers and cartographers for nearly a century past. The Royal Geographical Society prefers *Luchu*, the British Admiralty charts vary between *Luchu* and *Liu Kiu*, the Japanese Admiralty chart No. 34, probably out of deference to English usage, has *Liu Kiu*.

Curiously enough, the Luchuans themselves make but scant use of the name by which their country is known to the world at large. They have, as already explained, separate designations for each island, the chief island being almost invariably spoken of as *Uchina*, a name of which the Japanese *Okinawa*, used officially to denote the whole archipelago exclusive of the northern sub-groups, preserves a more archaic form. The characters employed to write it are 沖繩, the meaning of which is "sea-rope," given—so tradition asserts—on account of the likeness in shape of this island to a bit of rope floating on the waves; but whether this popular etymology has any serious claims to attention may be doubted. Another ancient Japanese, and perhaps also native, name for the archipelago is *Uruma*, which seems to be preserved in *Haderuma* (that is, "Extreme Uruma"), the southernmost and

nearly the furthest of the group. Of this name Uruma, no etymology is forthcoming.

In spelling the other Luchuan place-names that occur in this paper, I have consistently followed the Japanese pronunciation, chiefly because that is now the dominant one likely to survive in charts and in postal and telegraphic usage, partly also because the Shuri (Great Luchuan) pronunciation is widely departed from in the Further Isles, and one would, therefore, be involved in a maze of difficulties if one endeavoured to give the local pronunciation in each case. The Japanese pronunciation, on the other hand, is uniform and easily ascertained, and the orthography, now almost universally employed by resident Europeans for transliterating it, agrees almost exactly with the system recommended by the Royal Geographical Society. The sole difference is in the use of a line over certain vowels (e.g. *ō*, *ū*), to mark, *not tonic accent*, but long quantity, the distinction between long and short quantity being absolutely essential both in the Japanese and the Luchuan languages.

Before the reading of the paper, the PRESIDENT said: The paper we are assembled to hear this evening, on the Luchu Islands, is by one well able to give us valuable and good geographical information. Mr. Basil Hall Chamberlain is a most eminent linguist and philologist, especially as regards the languages of the far East; he is also a sound geographer. I regret we shall not be able to welcome him here this evening, but I am glad to say Major Darwin has kindly undertaken to read the paper for Mr. Chamberlain.

After the reading of the paper, the following discussion took place:—

Mr. SEEBOHM: My only claim to speak upon the Luchu islands is that during the last ten years I have been in correspondence with collectors of birds in Japan, and I have received several collections from these islands, and have written several papers upon the birds of this group of islands. There are one or two very interesting facts connected with them. The main islands which have been visited have been the northern and the central groups; the southern group is practically unknown ornithologically, and I must say that the visits have been very cursory, and I don't think we know anything like the full numbers of birds which are to be found there. Up to the present time there are no fewer than twelve species of birds which have already been discovered, and which are peculiar to the Luchu Islands. One of these, perhaps the most interesting, is a very handsome woodpecker, and this has been considered so extremely distinct from every other species that our great authority upon the woodpeckers has created a genus for its reception. Now, the geographical interest of these facts lies in this, that although the islands have been described this evening as having been partly of coral formation and partly volcanic, it is quite evident, from the bird-life upon them, that they must be extremely old. On the British Islands we have only one species of bird which is peculiar to them, and this is so extremely closely allied to a species in the north of Europe that it is very little evidence in favour of the separation for any long time of the British Islands from the Continent. Now, the existence of a bird generically distinct on the Luchu Islands shows that they have been for a very long time separated from the mainland. I am sure that we have listened with very great interest to the most valuable and important paper which has been read to us this evening, and we must all express our great thanks to Major Darwin for the excellent way in which he has read it.

Admiral Sir JOHN HAY: As a visitor to the Luchu Islands fifty years ago, I should like to express my great gratitude to Mr. Chamberlain for this most valuable paper. I do not wish to detain the Society, but I should like to point out how little change has taken place in the Luchu Islands since Captain Basil Hall, the grandfather of the present writer, visited them to the present time; and, looking to

the wonderful changes in Japan, one is surprised that the change has not spread over the subsidiary group, to which Japan will shortly, if it does not now, claim entire suzerainty. I had very little opportunity while there of examining or seeing much of the country; I travelled a little way, but not far. The admirable roads struck us all as marks of civilization. One would hardly have expected such a massive building as that in which the Prince of Luchu was concealed, like the Shogun of Japan, always invisible; it was a building of such massive structure that it would have required very heavy artillery to take it. However, that was not necessary, as they showed us the greatest possible civility, and were more than kind; but I must confess that that kindness was not extended by the ladies, who, although they may have seen us, did not take the opportunity of allowing us to see their charms. I thought, as one who had visited Luchu, it would be unfair if I did not thank Mr. Chamberlain for his paper.

The PRESIDENT: I am much obliged to Admiral Sir John Hay for having told us he has been to Luchu, for very few naval officers have the opportunity of visiting these islands. I am sure we have all listened to Mr. Chamberlain's paper with great interest; it is comprehensive, and when you have the opportunity of reading it you will find it exhaustive—such a paper as one would expect from the grandson of our old associate, who first gave us in our boyhood an account of these islands. Mr. Chamberlain's grandfather, Captain Basil Hall, the first modern writer on the Luchu Islands, was one of the earliest members of the Raleigh Club, which was the forerunner of this Society, and one of its most active members. He was also a member of the first Council of our Society, and I think that the occasion of this paper by his grandson being read before the Society should be taken as an opportunity for commemorating the great debt which geographical literature owes to Captain Basil Hall. That gallant officer and scientific seaman obtained for his books a place in the classics of British literature, through his admirable accounts of many distant lands, and through the thoroughness, elegance, and finish of his style. When I was a midshipman, and it was my all night in, I used to take Captain Hall's 'Fragments' into my hammock with me and read them by the light of the sentry's lantern. I think you will all feel it is an interesting coincidence that we should find his grandson following in his footsteps, in writing so graphic and lucid an account of the very islands the account of which served to build up the literary fame of his grandfather, Captain Basil Hall. We all, of course, regret that Mr. Chamberlain should not have been with us this evening, and I am sure that you will all join with me in a cordial vote of thanks for his valuable paper, and also a vote of thanks to Major Darwin for his kindness in taking so much trouble in preparing it and reading it to us.

UPON A VISIT TO TSAVO AND THE TAITA HIGHLANDS.

By C. W. HOBLEY.

WHAT follows is a short account of a journey to Tsavo and the mountain district of Taita, in the latter part of the year 1892. The start was made from Mombasa on September 21, with a small caravan of about 25 men all told. The ordinary route to the interior was taken by way of Mazera, Mwachi, and Taro. As there was at this season no water between Taro and Ndara, a distance of about 50 miles, a halt of one day was made at Taro in order to send on water ahead into the

middle of the plain for the use of the caravan. A number of large tins containing water were sent on to near Maziwa Mitatu, and by the help of this water Maungu was passed, and the camp Mkuyuni on the east side of Ndara mountain was safely reached. This stretch between Taro and Ndara, commonly known as the Taro plain, is a vast area covered with fairly open thorn scrub, composed of varieties of the acacia and large numbers of very light sponge-wood trees. These sponge-wood trees have only one use: if an incision is made in the bark, a whitish treacly substance immediately exudes; this solidifies in the sun, and forms a bright amber-coloured bleb of gum arabic. Now, this supply is at present entirely untouched, though it doubtless will not be long before it is added to the list of products of the country.

From Ndara a track running round the north end of the mountain to Ndi was followed, and from Ndi the Tsavo river was reached in one day. Around the north end of Ndara there are vast thickets of the Nkongwe aloe, each leaf being a long fleshy spike almost circular in section and often 4 feet in length; the fibre prepared from the leaf of this plant, beaten out and dried, makes beautiful silky rope largely used by the natives, and one day this product of the desert will also be utilized. It is very happily situated, for there are large numbers of the Taita people resident near by who would readily gather and dry this substance if they could find a market for the fibre.

From Tsavo a three days' journey was made to the upper course of the river in the direction of Kilimanjaro; around Tsavo station on all sides is dense, thorny jungle, so that it may be imagined it was not an easy matter to follow the course of the river. At one time there was a very well-marked Masai track, but naturally, since the building of the station, this track has fallen into disuse and become almost obliterated. At intervals of a few miles, prominent rocky ridges of pink gneiss traversed the country in a north and south direction, the river having cut for itself a channel through which to pass, with steep walls of rock on either side; each of these ridges meant a step in general contour of the country—a series of rapids of small falls being present in the river at these points. The river is usually only 70 or 80 feet wide, and abounds in fish of three kinds—a flat mud-fish of the Siluroid family, similar to those found in the Tana; silvery scaled fish something like perch; and occasionally eels are seen. Crocodiles inhabit the river, but not in large numbers. Water-buck abound along the banks, and numerous rhinoceros tracks lead down from the bush to the river. The banks of the river are fringed with dense groves of the hyphæne branching palm, the baobab (*Adansonia*), the mkindu or *Phœnix* palm, the miware or *Raphia* palm, and the large umbrella-shaped acacia is also found along the banks of the river. The baobabs are nearly all stripped of their bark by the Wakamba, who carry it away to make their beautiful woven baskets for carrying grain, known as chondos. The whole of

this district is a Wakamba hunting-ground; several of their camps were seen, and occasional parties met with. About two days' march brought us opposite the range marked on Ravenstein's map as *Theuka*. This mountain, viewed from the east or west side, has a most striking appearance; the lower half of the mountain is clothed with dense forest, the upper half is a mass of crags of pink gneiss, which terminate in a jagged serrated line of sharp peaks, but, upon reaching the south end of the range, it is found that these crags really run up into a sort of knife edge; the shape of the mountain from the south being that of an acute angled triangle, set upon a more obtuse angled pedestal, the forest-covered pedestal being mainly composed of an accumulation of talus or débris from the crags above. It was not possible to identify the range by the name Theuka, for neither the Wakamba nor the Wataita knew of the mountain by this name; the Wakamba called the mountain by the name Ngovi.

Away in the bush a few miles to the south of the river, opposite the Ngovi or Theuka mountain, a great irregular hump-like mass rises from the plain. This may possibly correspond with the gneiss dome called Manda; but here again the name is unrecognizable, the Wakamba calling the mountain Vaita. The Wakamba hunters told me that it is inhabited by a section of the Taveta tribe who cultivate the slopes. I was close under the northern slopes of the mountain, but could see no trace of the people, and the Wataita tell me that it was formerly inhabited, but is now deserted. The latter call it Ngolia. In connection with this, it may be mentioned that the people marked on the map as inhabiting this region, the Andei by name, as far as I know do not exist. The only people hunting over this country are Wakamba and Wataita, and neither of these people know anything of the Andei. Near the base of Theuka, on the right bank, there are large open stretches of alluvial ground covered with long water-grasses, and having signs of being periodically flooded, and on this account are highly adapted for the growth of rice; and the further one proceeded up river, the country became flatter, and these open stretches of alluvial soil occurred with greater frequency.

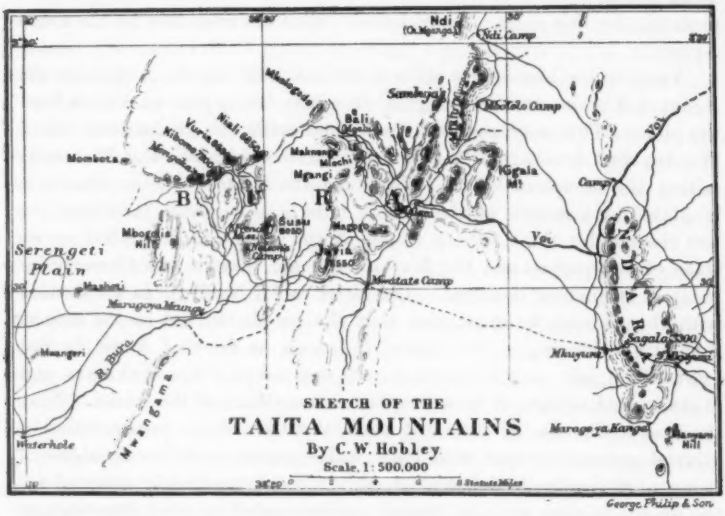
While we were in the neighbourhood of the Tsavo river, two curious phenomena were observed. On October 12, at about 10.30 a.m., a kind of parhelion was seen; it consisted of a luminous halo around the sun, the diameter being about 30° of arc, and between the halo and the horizon was part of another luminous inch, nearly touching the horizon, and running for about a quarter of a circle.

On October 20, at about 1 p.m., I experienced a slight earthquake, or rather earth-trémor. There was no perceptible motion, but it had a similar effect to the passing of an express train at a distance of a few yards. Its direction seemed to be from the west.

On the morning of the fifth day after leaving the station, our course

was turned down the stream, there being just enough food eked out with game to enable us to reach the station.

Leaving the Tsavo valley, we turned our steps in the direction of Taita, and a camp formed at Mbololo, which is situated at the southern end of the great mass known as the Ndi mountains. Mbololo is a very pretty site for a camp, being situated at the base of a small amphitheatre in the mountain range. An abundance of running water is found close to the camp, and the tents can be pitched under the shade of some enormous sycamore fig trees. The food, however, being very scarce at this place, it was decided to move camp, and accordingly, on November 11, we marched south, through the pass between Mbololo and the mountain to the east, known as Kigala, descending into the valley below,



where there is a running stream, which rises in the mountain on the west side of the Mbololo ridge, and eventually joins the Voi river. Proceeding parallel with the western spur of the mountain, which runs still further south, we eventually reached the valley of the Voi, and, crossing the stream, encamped under some fine specimens of the large thorny acacia on the south side. We were now in what is called the district of Mlaleni.

Soon after our arrival, the headman of the district sent down to inquire whether our intentions were peaceful or otherwise, as caravans seldom pass, and no European had been there before. The messengers retired reassured, and the headman, Mzee Mogodi, then sent in a goat. I responded with a present of cloth, and we eventually became very friendly, and he gave us greater assistance in the shape of food than any

other headman in the Taita district. He made his people grind and bring in flour during our stay at Mlaleni, and a large amount of food was purchased, in the shape of maize, flour, plantains, and mbaazi (a small kind of pea).

As I was the first European who had visited the place, Mogodi was extremely anxious that I should make blood-brotherhood with him, and as he was about the most important headman in Taita, I deemed it judicious to accede to his proposal. The day fixed for the event having arrived, a large number of Wataita assembled to witness the ceremony. A goat was killed and hastily skinned, when a small piece of meat was cut from the region of the breast and broiled over the fire; a mat was spread on the ground, and we sat upon it, facing each other. When the piece of meat was ready and cooked, a small incision was made upon the chests of Mogodi and myself sufficient to cause a minute spot of blood to appear. The piece of meat was then divided, each piece being touched by one of the spots of blood; these pieces were then exchanged and eaten; then, after a final embrace, the ceremony was ended. At the conclusion, Mogodi made an impassioned speech to all the tribesmen, stating that, now this tie had been contracted, they were to look upon me in the light of one of their own headmen, and that at any future time, if any quarrel arose between us, it was to be looked upon as a matter for our two selves only to settle; and that even were I to kill him, this was to be considered no business of theirs, and that they were not to avenge it in any way. This was, I presume, intended to show what unbounded confidence he placed in any one with whom he had contracted this tie. At any rate, I must say that, in the light of subsequent events, so far as I had dealings with him, he never departed in the least from his profession of friendship; for I had occasion to leave in his charge a large amount of food, and on each of the bags I placed a very small private seal, and I may mention that on my return these were all found to be intact.

The valley of the Voi is here very distinctly marked, and the land is very fertile. There are wide strips of dark alluvial soil on either side of the stream. The ground is closely cultivated by the Wataita, Indian corn or maize being the principal product. Mbaazi, koonde, and sweet potatoes are also grown to a considerable extent, and there are large tracts along the river and below the hills planted with sugar-cane and plantains. Excellent butter can be obtained here, as the Wataita possess a goodly number of cattle, and enormous flocks of goats and sheep. The Taita ideas as regards cultivation are not very high; they promiscuously plant maize, millet, koonde, wimbi, etc., all in the same area—this, too, without cleaning the ground from the dead stems of the last crop; and yet, as a rule, they get magnificent crops—that is, if there is only a sufficiency of rain. Some 2 miles to the north-west of Mogodi's the Voi splits into two streams, the larger coming from the west

and the smaller one from the north. The Voi at this season (November) is only a small stream, but in the rocky pools of its upper course large numbers of tiny fish are found, about the size of a sardine, and are called *dagarr* by the Swahilis. There is also a large fish which lives under the boulders in the stream-bed; it is rather like an eel, but stouter, and often attains a length of between 4 and 5 feet; it is called *mkunga*. In the rocky stream-beds of the smaller branches of the Voi the maidenhair fern is found growing in great luxuriance.

On November 15 we left Mlaleni, and after marching about two hours in a southerly direction, then turning to the south-west, in about half an hour we began to descend into the Mwatate valley, and another three-quarters of an hour brought us to the camp at Mwatate, on the Taveta road. The Mwatate valley varies from half a mile to a mile wide, and is very fertile in its lower portions; it contains large plantations of maize, sugar-cane, and plantains. The valley lies on the south-east side of the range of mountains, which ends so abruptly in the bold crag of Mwatate or Javia.

Some few miles to the north-east of Mwatate a colony of Wakamba have settled on the hills and cultivated a portion of the valley; they originally came from an isolated Wakamba settlement south of Kisigau, just within the German boundary. The hills in this part of the district, namely, at Mwatate and Bura, have a greater rainfall than those further north, as is shown by the greater amount of verdure visible upon their slopes and summits. The grass is perennially green, and the top of Mwatate mountain is partly covered with luxuriant growth of bracken fern. The Wataita show great ingenuity in conducting water through artificial channels among their plantations in the mountains, and, the little rivulets having a very rapid fall, they are enabled to do this without any great difficulty, and without the intervention of any mechanical water-lifting apparatus.

The Mwatate valley runs away southwards to join the Umba river, its course being marked by a belt of good timber; there is a fine fertile stretch of land at the bottom of the valley, capable of growing a large amount of grain. On November 18 we left Mwatate, and proceeding westward, climbing over the lofty spur which runs south from the crag of Javia, and winding round the flanks of the hills, a march of nearly 3 hours brought us into the Bura valley, where we encamped. Bura consists of one wide valley running nearly north and south, this valley ascending towards the north in a series of steps until the higher peaks are reached, the peaks being ranged round the head of the valley like a gigantic amphitheatre. From the bottom of the valley not a single village is visible; but if one climbs up to the higher parts, one is amazed at the number of villages dotted about in the nooks and corners of the slopes below him. The whole area of both hill and valley is extremely fertile, and in the hills, wherever there is a lack of moisture,

the natives artfully construct small conduits to irrigate the spot requiring water, there being perennial streams in every valley. The portion of the valley below the lowest step is an area of surpassing fertility; it is covered by one extensive banana grove, with here and there a sycamore fig tree dotted about. The banana plants grow to a large size, attaining a height of 15 feet, and the parts of the valley in the direction of the plain are principally given up to the cultivation of maize. In the hills, sweet potatoes, manioc, koonde (a small bean), and sugar-cane are the principal products. Here was also noticed the *mayugwa* of Kikuyu; it is a variety of colocassia. From the point where the Bura plantations end to a distance of, say, 16 miles into the plain of Serengeti, the course of the dry sandy stream-bed proceeding from this valley is fringed on both sides by a belt of noble forest trees, many of large dimensions. Up to about 6 miles from Bura, water can be obtained in various spots by digging in this stream-bed; beyond that point the water seems to become quite absorbed, none being found unless after exceptional rainfall. It is rather undecided at present whether this stream-bed drains away to the river Rufu or to the river Umba.

During my visit to Bura, being desirous to see the great plains of Serengeti, and if possible to obtain a little meat as a change of diet for the men, I made a short trip in that direction. These plains were formerly famous for the enormous quantity of game which inhabited them; but now, thanks to numerous European sportsmen, and the efforts of Wachagga and Wataita hunters, such is no longer the case. Very little game was seen, the only thing of note being a magnificent herd of about twenty giraffes. For the first few miles beyond Bura there is a fair amount of bush, and occasional belts of cactus and aloe; but beyond that, the wide open rolling plains stretch out before you in the direction of Taveta and Lake Jipe without a break, and with hardly a tree or bush.

On this journey I took with me several Wataita guides, and amongst these a native of Chagga, who had been driven from Chagga for practising witchcraft, and come to live at Bura; but soon after his arrival suspicion was aroused that he was killing cattle by his art, and the Wataita decided to kill him, and would have done so, were it not for the interposition of the French *padré*, who took him under his protection. This man volunteered to accompany us in the hopes of obtaining some meat, and I took him with us on account of his local knowledge of the plains. In camp at night he said he would prophesy as to whether we should obtain any meat during our wanderings on the following day. He accordingly took some pebbles, put them into a calabash, and rattled them about, listening the while with an air of intense concentration. After a while he informed us that in the first place a beast unfit for food would be killed; secondly, a supply of food would be hit upon right away in the bush; and thirdly, some large animal would be

killed. I thought no more of it at the time, but we started off before sunrise next morning, and after being out about an hour and a half, passed over some stony ground, and I suddenly saw the native in front leap high from the ground, and immediately ahead espied a large puff adder raising itself up and about to strike. Bringing my rifle to my shoulder, I at once blew off its head. This was incident number one. Going ahead for about a quarter of an hour, I suddenly came across a small *zereba* or *skerm* of thorns made by some hunters, and inside this we found a small pile of green bananas, beside the ashes of an old camp-fire. This was incident number two. About a couple of hours after this I managed to shoot a hartebeest; so, as it turned out, his forecast was right in every particular. At night he was again asked to find out what was to be the luck on the following day. He repeated his performance, but said that nothing would be killed; and although we had a long day, and every effort made to obtain some meat, the game was so wild and kept in the open, that we never found it possible to get within range; so the result of his prophecy, although a negative one, again came correct. I give this simply as an example of native attempts of prognostication of events. Whether the fulfilment was anything more than a coincidence I cannot pretend to say; one can always explain these sort of things by talking of coincidence. I have, however, given the facts as they occurred.

The chief headman of the Bura valley is an individual called Mbogoli, a man of considerable influence in this district, with a large number of villages under his control. He and his people are very friendly to passing caravans, and food, although dear, can be obtained without much difficulty. Of an entirely different caste are the people in the western flank of the big peak Vuria; these are the people of the late chief Mongeka, who was killed in the punitive operations undertaken by the Company in May, 1892. They are a tribe of marauders, and even now, after the severe lesson they then received, they will follow and lurk round the camps of small Swahili caravans to steal their trade-goods by night. The rest of the Wataita seem to have very little sympathy with them; even their language is a more archaic form than that of the other districts, and there is reason to believe that at some time or other this section of the Wataita received a considerable infusion of Wachagga blood. Large numbers carry spears, which is not the Taita custom; others, again, wear the characteristic Chagga circular ornaments, distending the lobes of the ear. There is, moreover, a large iron-working industry among this branch; they are the only Wataita who work iron, and they supply the whole country-side with axes, hoes, and knives. This ability, as is well known, is a great characteristic of the Wachagga, and the idea of irrigating their plantations among the hills by means of lateral water-channels is in all probability imported from Chagga.

Some six or seven years back there was a great drought, and consequent famine at Taita; large numbers of the inhabitants died off, others moved temporarily to Taveta, Ukambani, and numbers of the children were sold into slavery to buy food. This period, which is known as the *Mokusenga*, and other similar periods in the more distant past, seem to have crippled the Wataita beyond their power of recuperation. Before the occurrence of these blows to their prosperity, large areas of ground at the base of various mountains—Ndi, Mbololo, Ndara, Kisigau, etc.—were under complete cultivation; but the people have been so reduced in numbers that only about one-fifth to one-sixth of the former areas is at present under cultivation, the remainder having lapsed into tracks covered with grass, and here and there dotted with light scrub, the most extensive of these tracks being at Ndara. Before this time of drought, the mountain of Maungu was even inhabited; but, the water-supply failing for so long a period, they were obliged to abandon it and retire to Ndara.

The question of the immediate development of this district is one, I think, that is worthy of some attention; the construction of the road, which is now nearly finished, will place Taita in close communication with the coast by means of wheeled vehicles, thus enabling products to be profitably exported to the coast markets; and it would be well for the administration to encourage the Wataita to reclaim the large areas formerly occupied by their plantations which have now lapsed into waste land. If the Wataita were found too few in number (which is probably the case) to cope with the work, native colonists could be introduced, preferably Indians. A colony of this description would do a large business with passing caravans alone, as all travellers would have to obtain food here to carry them on to Ukambani; moreover, if the railway be constructed, the presence of a food dêpot of this kind would be of great assistance to the work. The localities available for the cultivation of rice are limited to the Voi valley—there is a considerable swampy track at the north end of Ndara eminently suitable for this product; but dhurra, or millet, maize, beans, manioc, sweet potatoes, plantains, and sugar-cane can be extensively grown. The Mlaleni district is eminently adapted for cattle; the Wataita told me that during the last visitation of the disease it nearly entirely escaped the scourge. Between Mlaleni and Ndara are large stretches of good grazing land.

On November 30 we left Mlaleni, and proceeded along the valley of the Voi towards Ndara; the road for about two miles actually follows the river-bed of the Voi, and on this occasion it necessitated marching knee-deep in water. About four and a half hours' journey brought us to the camp of Mkuyuni, just below the sight of the abandoned mission station of Sagala. There occur in the Voi valley vast beds of beautiful white crystalline limestone, interfoliated with the metamorphic

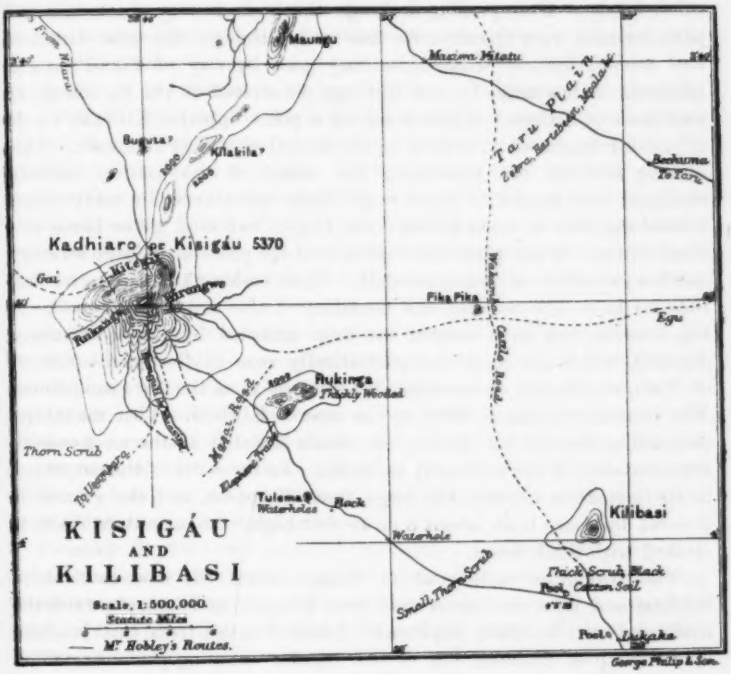
schists, and these same beds, by means of great faulting in the Bura mountains, are again repeated on Serengeti plain, and also near Mwatate. The western face of Ndara is entirely uncultivated, and covered with dense bush, but the summit is extensively cultivated, and is extremely fertile; it is intersected by a wide valley running north and south, abounding in rivulets of water. There are two camps at Ndara, known by the name of Mkuyuni, one in the east and the other on the west. The name of Mkuyuni is derived from *Mkuyu*, a sycamore fig tree, and the suffix *-uni* is simply one of location, meaning "at," both of the camps being shaded by fine specimens of this tree.

At the time of my visit the Wataita of the villages on the eastern face were suffering from the ravages of a disease, whether epidemic or otherwise I know not. The symptoms were swellings of the glands in the groin and armpits, pains in the head and abdomen, accompanied by diarrhœa. Death usually occurred at the close of the second day or on the morning of the third day after seizure; few of those attacked recovered from it, and, as far as I could gather, a considerable percentage of the population on the east side of the mountain had succumbed within a few weeks; they seemed quite paralyzed by the fear of it, all cultivation, etc., being at a standstill. The symptoms seemed to be identical with those of the Uganda plague.

On account of this sickness, which might have been contracted by the men, I decided to move from here as soon as practicable, and on December 6 the camp was struck, and a start was made for Kisigau. We first proceeded to the Swahili camp to the south of Ndara, known as Marago ya Kanga (camp of the guinea-fowl); near here a narrow track leaves the main road and runs away south to Kisigau. A march of about 21 miles from the south end of Ndara brings you to Kisigau. The last hour's march before reaching the mountains is through a most dense jungle of cactus, spiky aloe, and wait-a-bit thorn trees. The camping ground is most picturesquely situated at the foot of the mountain, the outline of which, with its tabular top, is extremely striking, and the great boulders of rock, which have in times past been broken from the upper face by atmospheric agencies and have rolled down the slope, stand out pink and grey among the banana groves, and form a most pleasing picture. After a short stay at the camp on the north-east face, we marched round the base of the mountain to the south. Progress was very difficult; the ground was fairly open, but every few yards it was intersected by deep nullahs, or torrent-beds, some as much as 20 feet deep, and these had to be crossed. But at last a native path was struck. Following this, we soon arrived at the camp on the south side, which is generally known as Marago ya Mnazi (camp of the coconut tree), so called from a solitary coco tree standing on the slope above the camp. Formerly a whole grove of coconut trees existed, following the course of the stream which runs down the

mountain, but in the famine year they were foolishly cut down that the owners might eat the soft, tender, undeveloped shoots at the crown of the tree. The camp is very completely shaded by a fine grove of trees with beautifully silver bark; they are known as *Msassi*. They have a very rough leaf, which can upon occasion be used as sandpaper.

The Kisigau people in many ways appear to be more enterprising than the other Wataita. They have, for instance, introduced from the coast, limes, coconuts, papaws, pine-apples, and one or two other



products, which as yet are quite unique among these tribes. All the importations seem to flourish.

The people on the south side of the mountain seem to live in considerable fear of the Masai raiders, who occasionally pass on their way from Arusha, Useri, etc., and camp here for the sake of the water; on this account the inhabitants of the mountain are afraid to open up for cultivation the plains around the base. As long as they confine their operations to the steep slopes they are safe, for the Masai will not venture upon the intricacies of the mountain-paths. There is a considerable amount of game in the plains south of Kisigau, and the rare antelopes,

the greater koodoo and sable, may be occasionally seen; the elephant and buffalo are also present. High up on Kisigau, at an altitude of about 3000 feet above sea-level, several specimens of the fresh-water crabs (*thelphusæ*) were observed.

On December 12 we left Kisigau, and struck coastwards by the Wanga route. Generally speaking, the road bore south-east by east. A march of about 7½ miles brought us to the south end of Rukinga, a mountain mass running north and south, and rising abruptly out of the plain east of Kisigau. It is uninhabited, and its slopes are clothed with thick woods. After passing Rukinga the bush is very thick, and the path becomes very obscure; for this road, although the most direct, is now unused by the Wataita, as they pass by way of Pika-Pika and Kilibasi. A few miles beyond Rukinga we arrived at the Ngurunga, or rock-pools of Tulema. Upon reaching a point opposite Kilibasi, a halt of one day was made to explore in the direction of that mountain. Proceeding towards the mountain, the aspect of the country entirely changes; new species of trees make their appearance, in many places massed together in dense forests; the bright red sand gives place to a black cotton soil, and there are evidences of the presence of large swampy patches in periods of heavy rainfall. Upon seeking the reason, we find that we have now reached the boundary of the metamorphic rocks of the interior, and have entered the area occupied by the sedimentary deposits, which are most characteristically seen in the neighbourhood of Taro, which may be conveniently referred to as the Taro sandstones. The boundary passes a little to the west of Kilibasi. That mountain, protruding through the sandstones, stands isolated as the most eastern representative of the metamorphic series. To the south of the mountain, in its immediate vicinity, the large trees disappear, and the ground is covered by dense bush, about 8 or 10 feet high; the mountain itself is clothed with thick forest.

The Wakamba cattle-road to Wanga skirts the western flank of Kilibasi and joins the direct road from Kisigau, and henceforward the road coastward is much improved. About 3 miles from this junction is the camp of Lukaka, one of the regular camping-places at which water can be relied upon; there are here large and numerous water-holes in the Taro sandstones. Another 6½ miles brought us to Birikani, which is also a regular camping-place; and here, on the summit of an isolated mass of rock, are some very peculiar water-holes. The orifices are about 6 inches in diameter, but within the rock they are chambered out to a diameter of several feet, and the surface for evaporation being so small, they are hardly ever known to dry up. The rock is composed of Taro sandstone, which seems to be naturally adapted for the formation of these water-holes. There is, however, not the slightest doubt that their formation is entirely due to natural causes, to the weathering action of the air and the organic action of plant-life.

The whole of this district is the hunting ground of the Walangulo tribe, who live in the vicinity of Taro. These people are, like the Waboni, hereditary slaves of the Wagalla, and they are supposed to hand over to the Gallas half the ivory they kill; they formerly lived in the jungle around Taro, but have now moved to near Samburu, where they are intermixing a good deal with the Wanyika, and thus evading the authorities of the Gallas. The Walangulo are marvellously keen hunters and clever trackers. The Wanyika told me that the Walangulo prepare a drug from certain plants which enables them to track game by means of scent. This drug being swallowed by the hunter, renders his smell so acute that it enables him to follow up the game in the same way as the hound; in fact, I was even shown two plants said to be ingredients of this mixture. Of course, this idea may be accepted for what it is worth. It may have arisen from people having seen those hunters following up tracks which were to the ordinary native quite invisible. In appearance they are very similar to Wanyika, but they carry very long powerful bows. Parties of these hunters are often hired out by the chiefs of Chagga to hunt elephants; their method of dealing with thick-skinned animals, like the elephant and rhino, is to shoot them with a poisoned arrow in the comparative thin skin at the back of the foot just above the heel.

In the bush to the south of Kilibasi a considerable number of the lesser koodoo (*Strepsiceros imberbis*) are to be found, but between Kilibasi and Kisigau very little game is to be seen, a few giraffes, mpala, and hartebeest. Some little distance to the north of this road a curious sight was seen—namely, that of a pack of wild hunting dogs engaged in pursuing a solitary zebra; the zebra was flecked with foam, and evidently, being very hard pressed, could not possibly hold out much longer from its bloodthirsty pursuers.

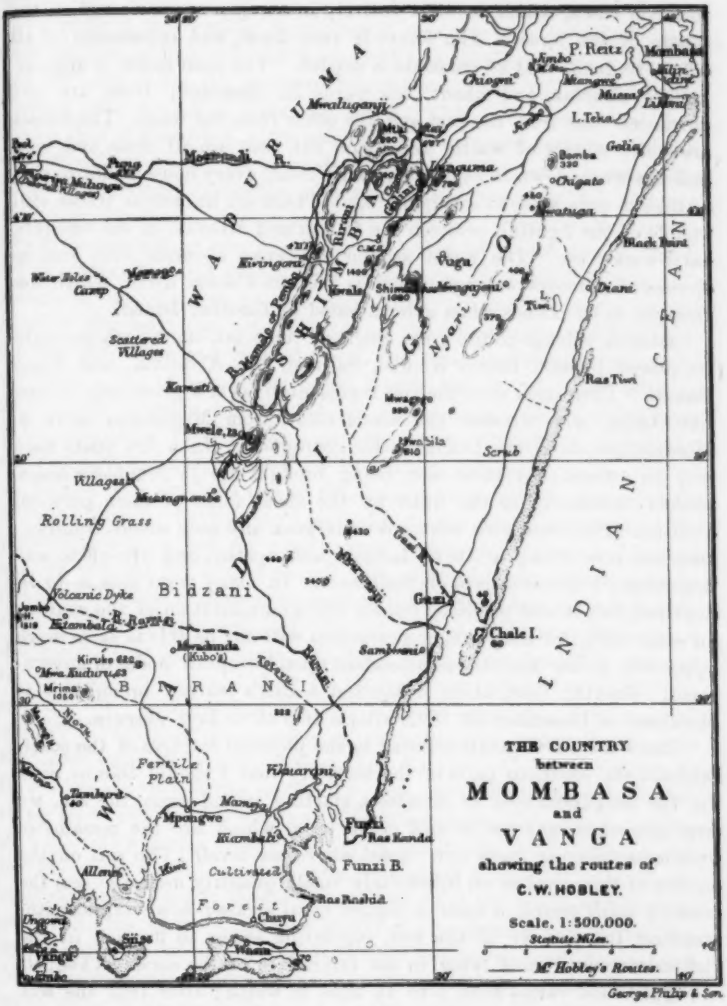
Leaving Birikani, we marched on another 4 miles, and camped in a small valley with abundant water-holes. However, before reaching camp we passed through a very desolate-looking stretch, too stony to grow much vegetation. On the 16th a short march of about 5 miles brought us to Ada, and we camped here with the idea of purchasing food, but to our surprise found the Wadigo villages one and all deserted, at some comparative distant period. I afterwards found that all the inhabitants had moved coastwards soon after the year of the big famine. This discovery was rather serious, as the caravan was short of food, but later in the day I was fortunate enough to obtain some game to supply the deficiency. The country to the north of Ada is of a very desolate, stony character, and also seems to suffer from a chronic state of drought; even the trees are all dead and shrivelled from want of moisture, and grass there is absolutely none. However, from later observations I find this barren belt is not of very great extent. On the 18th, after about 8 miles' march, we entered the Digo country proper, and thenceforward

to the coast is one inhabited stretch. The country is vastly greener and more fertile than any passed through from Kisigau, and there is, moreover, an abundance of water in most of the villages. After a march of about 16 miles we camped to the north-west of the hills of Jombo. Passing to the south of this hill on the following day, we reached the river Mwena. Leaving the river Mwena, about 6½ miles' march brought us to the river Umba, and the coconut plantations which follow its course. The point at which the Kisigau road reaches the Umba is marked by a village called Gonja. Proceeding onwards about south-east, a continuous series of fine plantations of coconut and mango trees are passed through, and there is a thick population of Wadigo. About 9 miles from Gonja we entered the town of Wanga, and camped in a large coconut grove outside the walls belonging to Sheikh Mbaruk. Immediately behind Wanga is a large extent of very low-lying flat land, the soil of which is black alluvial mud; this area can be periodically flooded, and is extensively employed for the purpose of rice cultivation. The whole tract is divided up like the squares on a chessboard by means of earthen embankments or causeways, which partition up the area into a series of shallow tanks. The water is first let into these squares nearest the river, and by means of primitive sluices it is taken on to the adjoining plots at the will of the cultivator. On account of this large swampy area near the town, and the abundance of mangrove on the sea-front, the town of Wanga is distinctly unhealthy and malarious.

Leaving Wanga on the following day, we proceeded by boat to Chuyu on the mainland, opposite the island of Wassein. The Company have here built a substantial residence for the agent of the district; it is a very pleasant site, and is a much healthier situation than either Wanga or Wassein. There are here found numbers of large caves in the coral rocks, the rock having been dissolved out by the action of the sea-water. At the back of the house, some miles in either direction, there is a belt of dense forest containing excellent timber; moreover, the creeks all along this stretch of coast are lined with thick fringes of mangrove; this mangrove timber often attains large dimensions, many of the spars being from 60 to 70 feet, perfectly straight, and having a diameter of 2 feet at a man's height from the ground. Even now the timber trade of the district is considerable, a large amount being sent to Zanzibar; but the quantity is so great, and so admirably situated in close proximity to the seashore, that it cannot be long before European enterprise will establish steam timber-mills in this locality.

Leaving Chuyu, we returned to Mombasa by the route following the coast-line; *en route* the town of Gazi, the residence of the great chief Mbaruk-bin Raschid, was passed through, and the old sheikh visited. This man is a very striking character, and is the head of the Mazrui faction on the coast, and he claims to be King of Mombasa, the Mazruis having held independent possession of that town until driven

out by the Sultan of Zanzibar. Mbaruk's power was, however, greatly broken by Said Burghash, who sent an army under General Mathews to bring him to terms. Mbaruk fled to his fortified stronghold Mwele,



at the south end of the Shimba hills, and was there besieged by General Mathews' forces; but after a few weeks the place was taken by assault. This place, Mwele, is situated on the summit of a hill, 1400 feet above

sea-level. The hill is crowned by a fine patch of forest; from without not a trace of habitation can be seen, but upon approach an arched tunnel is noticed. Following this footpath for about 200 yards, one arrives at a strong timbered gateway, and passing under this emerges suddenly into the town, which is built entirely in an open space cleared in the centre of the forest. The forest is very dense, and impassable on all sides—so dense that no stockade is needed. The open space is approximately circular, and about 250 yards in diameter; there are two entrances—one from the east and the other from the west. The houses are built wholly of wattle and daub, but they are all clean and tidy, and the whole town is kept exemplarily clean, every householder having stringent orders as to sweeping, etc. There are numerous traces still visible of the fighting between the Sultan and Mbaruk, in old rifle-pits, earthworks, etc. The forest around the town abounds with various species of monkeys, amongst which is the rare *Colobus Kirkii*, which was thought to be extinct when exterminated in Zanzibar Island.

Mbaruk belongs to the great chiefs of the coast, among whom might be placed Bushiri, Hamis Kombo, Suliman bin Abdullah, and Fumo Bakari. These men were the last representatives of a great race of warlike Arabs, who wrested the whole coast, from Magodisho down to Mozambique, from the hands of the Portuguese. In a few years they will be extinct; for these men, being brought up in troublous times, pushed themselves to the front by the sheer force of their personal abilities. But their sons have not undergone any such severe training; they are now living a life of laziness and apathy, and are effete and degenerate representatives of their race. In many ways this is to be deplored, but it will probably render the administration of the country an easier task, for the younger generation will not be able to raise much opposition to the innovations attendant upon European modes of government. Leaving Gazi, about a day and a half's journey brought us to Mombasa on December 24, 1892, after a trip of 95 days' absence.

There are a few points relating to the physical features of the coastlands in the southern parts of the territory that I should like to note. In the neighbourhood of Mombasa, starting inland from the sea, we first get what may be termed coral beds, which are the remains of enormous fringing reefs now raised above sea-level. The soil on the surface of this coral is an indefinitely small quantity near the sea, the country being simply a mass of jagged coral spikes; however, notwithstanding the paucity of the soil, vegetation seems to flourish in the rich calcareous humus lying in the interstices of the coral. This belt of rugged land varies from ½ to 1½ mile in width; after that the soil deepens, and the area is covered by a continuous belt of coconut shambas, the width of this belt varying from 2 to 3 miles. This area was formerly occupied by the lagoon which may be seen to-day within the reefs of the coast. Beyond this there is a very sudden change from

shambas into grass lands of a very arid, stony character, and thus marking the line of junction between recent coral formation and the older ferruginous shales and mudstones of about Jurassic age. These shales being much jointed and broken are easily denuded, and during the periods of the tropical downpour of rain, the area in which these beds crop out is dissected and carved out into numberless steep ravines, and the bulk of the soil is completely washed away, the ground being covered with a mass of shale and *débris*. This belt possesses no good timber, but is characterized by specimens of a stunted variety of ebony and other hard-wood trees of small dimensions. Beyond this comes the massive sandstones, probably of newer Palæozoic age, which compose the prominent ranges of Shimba, Buni, and Ribe. Slight variations are sometimes caused by the occurrence of a bed of white alluvial sand, which covers the arid shales often to a depth of 20 feet. Where this occurs, as at Changamwe, the plantations run inland nearly to the limit of this belt; but usually between the plantations and the open barren lands there is a tract of forest, and this tract carries some very useful timber: *msandarusi* or copal, *bamba kofi* or red copal, *mriti* or African ash, *mwalika*, *mchaani*, *mkwaju*, or tamarind, *mkomo* or hyphæne palm, *mzembarao* (which bears an edible plum-like fruit), and many other species specially adapted for all kinds of carpentry.

Now, at the southern end of the Company's boundary, this sequence is varied a little; the belt of rugged coral on the immediate coast-line is practically similar, but for some reason, perhaps a greater rainfall, it is usually covered by a magnificent belt of wood, from which a large quantity of valuable timber can be obtained. Proceeding further inland, the coral is at length lost sight of, but instead of the secondary shales dropping out as in the north, the deep white sand previously referred to covers everything, and there are large flat stretches of savannah-like country with timbered patches and belts at intervals. This type of country is varied by the presence of volcanic rocks, which stand out in the three summits, Jombo, Mrima, and Kiruko. The lower slopes of these hills are very fertile, and, in the case of the two latter, are extensively cultivated by the Wadigo. The flat stretches of savannah country give place to a gently rolling country, in which the older beds crop out, but the coarse sandstones of Shimba are entirely missing, their southernmost exposure being at Mwele. But throughout the whole width of the coast-belt, the barren secondary shales and mudstones never crop out to the same extent as they do between Changamwe and Mazera, and from this reason the width of the belt of very fertile country is several miles wider to the south than it is in the region of Mombasa. It may be here remarked that the volcanic intrusions of Jombo, etc., are of a later date than the shales and sandstones of the Taro and Shimba group, for in many places dykes, evidently contemporaneous with these centres of disturbance, may be seen intersecting and traversing these rocks.

NOTES OF A JOURNEY IN NORTHERN MONGOLIA IN 1893.

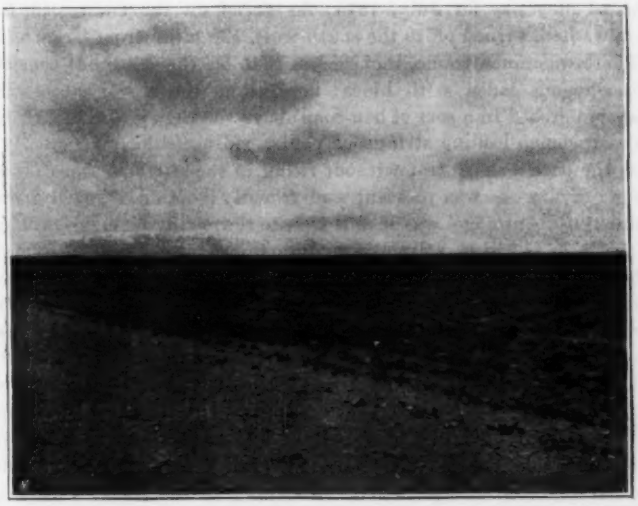
By A. A. BORRADAILE, late Bombay Civil Service.

THE mule-litter journey from Peking to Kalgan needs no description, and the crossing of the Gobi is almost as commonplace. With the kind help of M. Volasatoff, a Russian at Kalgan, and with two dictionaries, a contract was entered into by a Mongol to deliver me at Urga in twenty days, and on the evening of the 20th I arrived there. From start to near the finish I only saw six trees—stunted willows in a dry watercourse. There were immense herds of ponies, camels, and cattle, and flocks of sheep, and we passed long strings of camels going south with hides and timber, or north with tea. After a fortnight, when rather bored with the grand monotony of the landscape and its more than Trappist silence, my Chinese servant Liu San came running to me with the news, pointing to a camp, "One Loos woman, two piece Loos man, master." It did not take me long to pour the last drop of our precious water into a basin, make some change of dress, and pay a visit. Never did words sound sweeter than the "Entrez, monsieur" from the tent, where I found the most charming of ladies *en route* for Urga, under the care of a priest and a Cossack, all Roos.

The hills reached just before crossing the Tola are like all in Mongolia, bare on the south, but covered with forest on the north. Beyond the river are the two towns of Urga—locally Takuren—the Chinese to the east, the Mongol to the west, about four miles apart, with the Russian consulate midway on a commanding site. M. Shishmaroff, the consul-general, has a secretary and a dragoman, who occupy apartments in the main building. In the compound are bungalows for the postmaster and the chaplain, the green cupola of whose chapel, with its great gilt cross, forms a fine landmark. Some half-dozen student interpreters have a separate building, and about as many Cossacks form a nominal guard, the whole enclosed in a wall. Nothing could exceed the friendliness of every member of this little society, and I cannot help noting that it would be difficult to find elsewhere more beauty in such a small circle of ladies. At meals they occupied one end of the table, we men the other. The hostess received our adieux at the door, a pretty custom gracefully carried out.

With thoughtful consideration, M. Shishmaroff, whose acquaintance I had made at Tientsin, had secured me rooms with a Russian trader in the Mongol town, and I had only the first day to receive my letters and pass on. On a later visit his dragoman asked me, in a friendly confidential manner, for my real reason for the journey, and affected entire acquiescence in the reply, "Pour nous autres Anglais, Monsieur, il faut circuler." My host, M. Kazatchihin, was hospitality itself; he made for me another contract as far as Uliassutae, and at parting pressed on me everything he could think of useful or agreeable.

On Wednesday, May 17, I left Urga at 8 a.m. My cart drawn by a camel led by a Mongol on another, one more Mongol similarly mounted, several baggage camels in the rear, a Chinese interpreter and Liu San on ponies, composed the caravan. The contract was to land me at Uliassutae in twenty-five days for £60, and after starting I promised the men each a tael for every day gained; they gained five days. My cart, though springless, had been made comfortable by a 2-feet straw mattress, over which a Wolseley valise was spread; it had two side doors



VIEW IN THE GOBI DESERT.

and a front window, and held my necessary belongings, books, etc. We generally stopped in the forenoon for a couple of hours, at 9 p.m. for half an hour, and then went on most of the night. The followers had a tent. A dog attached himself to us from the start, and saw us through.*

Our course lay west over a plain north of and parallel to the Tola till, about 3 p.m., the river made a bend to the south-west, and we mounted a low pass on to another plain between two ranges of grassy downs, which continued through the next day. I walked most of the way,†

* These dogs are the undertakers of Mongolia. There is neither sepulture nor cremation. When a body has pressed the button of departure he is carried to the outskirts, and then they "do all the rest." Whether our friend found business slack at home, or scented "a special line" with us, he only knows.

† My followers were greatly puzzled over my age. When they could bear it no longer, they formed a deputation to settle the point. "Mongols say master very old," began Liu San; and I bowed assent. "This man say, 'Look, see white beard;' that man say, 'The Daren walks 60, 100 li every day;' please, master, how old?" I opened my

the weather perfect, climate glorious. On the 19th, at 8 a.m., we came to a small lake pronounced "Ha-ha," with quite a population with herds and flocks; to the south-west, beyond a nearer range, were seen the snow-covered tops of the Khangai chain. At 12.30 we struck the Tola, now some 100 yards wide and 3 feet deep, 90 miles from Urga. After crossing it we mounted by an easy pass into the hills, among which we wound till at 6 p.m. we came to a descent so steep we had to let the cart down by ropes. After another day of lovely mountain views, at 6 p.m. we sighted Chintologoi (Paderin's seventh station, *vide* Yule's paper, *Geographical Magazine* for July, 1874) far ahead on the main road, from which we here turned off to the south-west, 120 miles from Urga.

There was much traffic, though less than on the Gobi. It consisted of ox-waggons laden with hides; families on the move, the smallest members perched in a sort of hen-coop above the baggage on the camels; men and women leading strings of ponies, riding alike, and equally at home, the pace a sharp trot without rising in the stirrups, seat easy and strong. Every one was pleasant and friendly; both sexes well grown. On the 21st Chintologoi was in full view to the north, the ridge on which the fort stands rising solitary out of a grassy plain with water and herds of cattle and camels. The midday halt was at a singularly beautiful site, looking across to the town of Pattangkor on the south slope of a hill. Four miles further we crossed a strong muddy stream 12 feet broad and 2 feet deep, running north, and then we turned more to the south along the foot of a rocky snow-covered range, which we skirted for some hours. On the 22nd I made a *détour* to a temple picturesquely situated in a semicircle of hills, with willows along the dry bed of a watercourse; it contained a large image of Buddha, with the usual quaint altar ornaments. Returning to the track, we crossed a wide plain intersected with many shallow streams, and about 6 p.m. crossed a wider and stronger one, which may be the Karukha. On the 23rd, after innumerable delays from baggage shifting, my cart-camel lying down, etc., we camped beside the Koshung-Orkhon, running north-west clear and rapid, an enormous herd of ponies disporting themselves in it. Here we left the track and took a bee-line to the west, getting gradually into broken marshy ground, which compelled a halt after dark.

The first thing I saw in the morning of the 24th was the fort of Kara Balghassun in the distance. Starting at 5 a.m., we did not arrive till 8·30; track there was none, the surface, covered with mounds of tussocky grass surrounded by water, could only be traversed by stepping from one mound to another. The Orkhon—a different stream from

---

hands, and they counted ten; again, twenty; when we reached the forties, a look of "We are coming to it now;" the seventies brought gravity, which deepened at the eighties; and with the century they solemnly stroked their beards and left that interesting survival.

yesterday's—some 50 to 100 yards wide, ran through the marsh with a north course. The fort is south of the Ugei Nor, and is a square about 400 yards each side, mud walls some 20 feet high. There is an opening on the east, and inside the west is a mound some 40 feet high; no remains of masonry. At the south-east corner another mound, as of a keep. Beyond the walls lines indicating the suburbs, and a fosse is at the foot.

The ruins were visited by the expeditions of Heikel in 1890 and of Radloff in the following year, and the resulting opinion is that the fort of Kara Balghassun represents the site of the capital of the Uigurs,

INSIDE FORT, KOBDO.

and the monastery of Erdeni Tsao, some five hours to the south, that of Karakorum, the capital of Genghis Khan, who reigned there two hundred years after the former had been destroyed, and whose great-grandson Kublai, in A.D. 1253, there received Rubriquis, and in 1280 Marco Polo, and then moved to Cambaluc—now Peking. After all trace of its very site had been lost, Karakorum was in 1824 correctly placed by M. Abel Rémasat at the headwaters of the Orkhon. In 1872 Mr. Ney Elias tried hard to reach it, and at last, in 1873, it and Kara Balghassun were visited by the Russian Paderin.

The Uigurs originally occupied the northern parts of the Chinese provinces of Kansou and Shansi, but were driven out about the third century B.C., and settled west of Ordos. In A.D. 338 they established

themselves on the Upper Selenga. In 629 they fell under Chinese domination, and to it, with few exceptions, remained faithful, their chiefs receiving princesses from the Imperial family, and from the Emperor a gold seal of office in the form of a fish. Lines of hostels were settled along the route by which the tribute of sable skins was annually conveyed to Peking, and everything done to maintain close friendly relations.

In 742 their capital was on the Orkhon, doubtless on the site of Kara Balghassun. They must then have been of some importance, for they defeated a certain rebel, with a loss to him of 60,000 killed and 20,000 prisoners,' and with the reward of one of the Emperor's own daughters and a long title to their chief. They then helped to drive the Tibetans from China, but overstayed their welcome and committed so many outrages in Peking, that when, on a subsequent need, they offered assistance it was declined as too dear. A deputation to solicit the hand of a princess in 821 consisted of 2000 women, 20,000 horsemen, and 1400 camels.

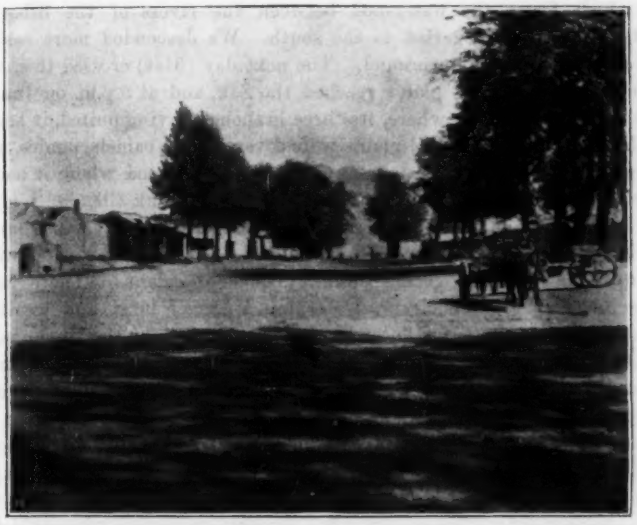
Their fall was sudden. In 745 their sway had extended to the Altai, and generally corresponded to the old empire of the Huns, with whose language their own had affinity; but in 839 famine and pestilence, with snowstorms which destroyed their main wealth of cattle, sheep, etc., ruined them; and the next year, attacked by 100,000 horsemen, they were completely wiped out, their chief killed, and capital burnt. By command of the Emperor of China, monuments with sculptured inscriptions were raised, and these have been the object of the learned pilgrimages alluded to.

Some 300 yards outside the south front of the fort one lies in fragments, and from these Heikel has prepared a sketch of what it may have been in the ninth century, of red marble, with a height of 600 c. m. and a base width of 200. The body is covered with trilingual inscriptions, of which the Chinese alone is in known characters; those of the others correspond in some degree to those found in the Yenisei valley.

The ruins and their desolate surroundings did not invite a long stay, and a visit to Erdeni Tsao did not promise anything of greater interest. There was no visible population, but Liu San, the last thing at night, emptied his revolver for the information of visitors.

On the 25th we left Kara Balghassun, and, holding the same west course, passed into higher ground with green downs, and so among the hills, till at 10 a.m. next day we struck the south Tamir, a strong clear stream some 40 yards wide and 3 feet deep, with a north-east course, and from the crossing followed a south-west line parallel to it up the valley. Willows in plenty were along its banks, and these and the few seen on the 22nd were the only trees since leaving Urga. At 6 p.m. passed the Lamaserai of Tsai ya Kake, beautifully situated on

the high left bank, and an hour later the town of Tsahang da va naigur, at the foot of hills sheltering it on the west, north, and east. Here, as night fell, I got separated from the caravan, and passed a rather bad quarter-hour. Every one had gone to bed except the dogs; I could not have asked the route, and had every belief that the people would, as often before, go on for hours, thinking they were following me. However, some one was sent back, and found me chilled to the bone, but hot soup and some medical comfort * brought me round.



HIGH STREET, KOBDO.

The following morning (27th) saw us camped beside a mountain tarn, frozen 2 feet thick, and surrounded by a forest of pines, a most picturesque spot. The pass we had now to tackle was too much for the camels, which were replaced by bullocks. How even they got the cart to the top I cannot conceive, for I went ahead in despair, and the descent on its north side was almost as bad. It was pleasant to hear the cuckoo, which put me in touch with home. About noon we struck the north Tamir, and passed up its valley on the right bank till the next day, at 9.30 a.m., when we crossed to its left bank, and a few miles later left it altogether and took a north-west course, gradually mounting by a gradient easy till near the head of the pass Ulaldza, when ponies had

* ℞ Spiritus frumenti ... ... ℥ ii.
Sacch. alb. ... ... *q.s.*
Aq. bullient ... ... ʒ ss.
M. fl. haustus. C.K.

to replace the camel. During the night we crossed the Khanui and had come to the Chilutu, but, to avoid a bad crossing, turned to the north, and, skirting its right bank for some hours, then crossed a fine clear stream, strong, with a rocky bottom. We then resumed the west course up a valley, through which ran a torrent forming a chain of lakes, each frozen thick; the green foaming water, the blue ice, and the snow above it formed a charming sight. We then again struck the Chinese post route, and engaged a yak and bullock for the morrow.

They were much wanted, for the track was bad up the pass, the head of which forms the watershed between the rivers of the Siberian system and the Jungarian to the south. We descended more easily, and camped by the Khurmingol. The next day (31st) crossed this, and over delightful rolling plains reached the Zak, and at 5 p.m. on June 1 struck the Sarasnagol, where, its three branches having united, it bends to the west. The splendid plains were covered with camels, ponies, and sheep, but the population sparse. Crossing the Sarasna where it bends to the south-west, and continuing along its left bank till 5.30 p.m. of the 2nd, we then crossed to its right bank and left it on our west course. All the higher hills were now (3rd) covered with snow, the population greater, and wildfowl, geese, Brahminy duck abundant. There were many circular grave enclosures, showing a former large and wealthy population. A stream we followed all day seemed to be the Buyanta.

At starting on the 4th the road became worse than ever, stones, fallen from the steep hillsides, covered all the narrow track like a London road under repair, and made it equally painful to walk or to ride. The redeeming feature was the broad ribbon of colour on both banks of the stream made by iris of all shades of purple, the clumps, 2 and 3 feet diameter, continuous for miles. Population increased; there were plenty of sheep, guarded by men on ponies without dogs. Snow fell off and on all the 5th, with a gale of wind. We passed a Lamaserai with the sacred legend, "Om mani padme Hom," in white stones set in the turf of a hill opposite, and then began to ascend the last pass; it was very steep, and made worse by the wind in our teeth. But the view from the Kotul repaid me. A sea of mountains all around, and nestling at our feet some 10 or 12 miles to the west lay Uliassutae. It seemed the highest point reached, and I would gladly have lingered, but a blizzard was blowing, and we descended by sharp zigzags into the valley, and were soon receiving a friendly welcome from the Russian colony.

The Yamen is in a walled enclosure a mile from the town, and reserved exclusively for the Chinese officials and garrison. There I went on the 6th, and was politely met and asked why I had not been heard of before, as, under orders from Peking, I had been awaited along the whole line. I replied that I had no wish to trouble the Administration while I could manage by private contract, but was now forced to

beg their good offices. This seemed to please them, and they at once gave me a posting order to the frontier, *viâ* Kobdo. Along the route are stations every 15 to 20 miles; each has a Chinese and a Mongol white button, whose duty it is to receive the traveller, place a clean felt tent at his disposal, and provide relays of animals.

We left on the 9th; on the 11th passed the junction of the Buyanta with the Zabkan, and followed the latter, seeing beyond it a range of sandhills running parallel. The heat was greater—85° in the cart—and we were obliged to run camels tandem, and the next day even three

"OM MANI PADME HOM," IN WHITE STONES ON HILLSIDE.

were hardly enough to pull through the heavy sand. The river-bed was refreshingly green, covered with ponies and sheep, and showed more population.

We crossed early on the 12th to the left bank, before which the sand-range had ceased, and the next day parted company with the river at Argalingtu, where it turns north-west, and ourselves continued west till at 2 p.m. we reached Panga Nor—Ney Elias' Lake Baka—and had the usual good reception. I liked the Mongols the more I saw of them; they have all excellent manners, frank and manly. Ponies were here attached to the cart for the first time. A 12-foot pole was tied across the shafts and carried by the men, two at each end, on the saddle in front of them, others attached ropes to the pole, and in this way eight at times were pulling. And they were none too many, for we

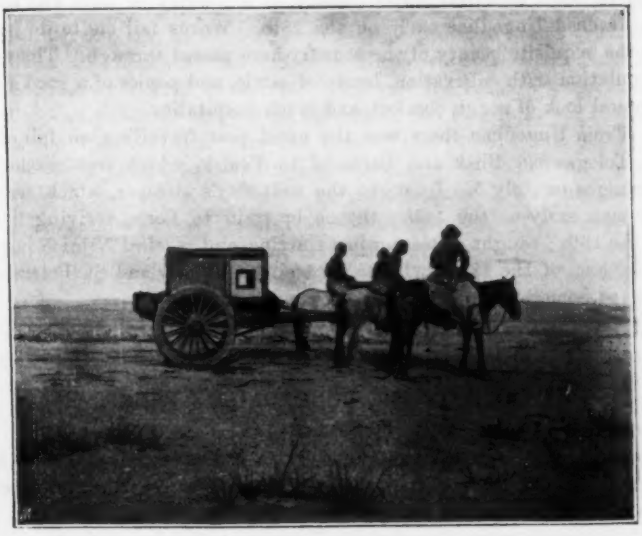
here began the passage of the sand-range, so admirably described by Mr. Elias. It took us from 2.30 p.m. till dark, and I can quite understand the danger in one of the gales so prevalent, when the track is obliterated and every landmark changed. I walked the whole distance, and found that the only hard portion of the sand was at the very crest of the ridges; everywhere else the ponies sank fetlock-deep, while the grades were excessively steep. We had in all some twenty ponies, besides the baggage camels, and were relieved to have got safely across. There is, of course, no water, and, beyond some reedy grass and a shrub or two, no vegetation. The shapes given to the hill-tops by the wind are fantastic, and the hollows, 100 yards wide and as many feet deep, scooped by the same agency as clean as out of a cheese, are weird. From the highest point I saw to the east Panga Nor, with its plain and hills beyond; before, behind, and around me the sandhills, some 200 feet high; to the north-west the Turgen Nor, with snow-clad mountains beyond; and over all the declining sun gave a wonderful colouring. At the station below the range I said good-bye to the excellent fellows who had brought me over. The currency west of Urga is in waste silk handkerchiefs, and I was glad to add to their tips in these sweetmeats, cheroots, etc., for they deserved it. The Mongols are born horsemen; many of my escort were twelve years old, and the way they took the deepest nullahs, the worst corners, with perfect nerve, laughing and chatting, at 12 miles an hour, with nothing but kindness to their ponies, is one of the pleasantest recollections of my journey.

We rounded the south shore of the Lake Turgen, then by a pass, at first easy, after rocky and tortuous, when the boys had it all their own way, and I had not the heart to check them, we crossed the range, and beyond it came to a lake—Chagan—then dry, and not in Ney Elias' map, or mentioned in his paper, so our routes here may have differed. On the 15th we came across a strong stream in an evidently artificial bed, but without a sign of cultivation from it; it flowed into the Chagan. After a day, trying from heat and rocky road covered with clumps of tussocky grass, we reached Hărās—Elias' Hara—most of its surface covered with tall reeds.

On the 16th I looked down on Kobdo, and was met by the entire Russian colony, who placed rooms at my disposal, and were most kind. Having shortly to return Liu San into store, I was glad to meet here a German-speaking Russian, who accompanied me to near Tomsk, where he left me in the night, after having cut open my Gladstone bags with a knife, a present from myself, and abstracted three "shoes" of silver, value about £30. It was lucky he took no more, and stayed so far. I fear the limitation of his takings was due rather to ignorance than to his own moderation. The conditions of the little Russian communities in Urga, Uliassutae, and Kobdo are much the same. In

the first the chief interest is the tea transit, and this will cease as soon as the Siberian railway is completed. It now takes a year from Tientsin to Irbit, the mart from which it is distributed over Russia; it will then go from Hankau to Vladivostock, and reach its destination in fewer weeks than now months. The loss to Mongolia will be great. In all three towns the trade is petty, and the goods, of course, mostly Russian, nothing English, the exports hides and cattle. Kobdo, like Uliassutae, is open, with a separate Fort for the Chinese officials and garrison; the former were helpful.

I left on the 18th, greatly pleased with Kobdo, which reminded me



STARTING FOR THE SANDHILLS.

of a well-kept Indian cantonment, the streets broad, straight, lined with a tree like the peepul, and with a strong clear stream flowing down each side. The running water and green foliage would have made any place agreeable, but after all these weeks of treeless travel, and with the knowledge of successful completion of the journey, they enhanced the pleasure.

The rest may be dismissed shortly. The course now lay north. At 10 a.m. of the 21st we reached the river Kobdo, but were stopped at a point where we had to pass between it and a hill, from which enormous boulders had fallen. The ponies were taken out, the cart emptied and carried bodily over the obstruction; we then reloaded and inspanned, and trotted a mile or two to the ferry, where we crossed on a frail platform—on three dug-outs lashed together—a deep, strong stream some

400 yards wide. We reached Suok by 9 a.m. of the 22nd, crossed the Suok pass in the forenoon of the 23rd, and at the outlet of its valley halted on the edge of the splendid plain which divides Mongolia from Siberia. One more change of ponies, and then towards evening I was landed at Koshemot, the Russian customs station.

With base ingratitude, I was delighted to exchange the cart which had brought me so far and been so useful for riding ponies, and I have rarely enjoyed anything more than the route to Ungodhae down the valley of the Chui. We started after noon of the 24th, a party of the Russian residents accompanying me a couple of miles, a kindly courtesy, and through beautiful Swiss scenery in a country of milk and honey, we reached Ungodhae early on the 28th. Words fail me to do justice to the exquisite beauty of the country here passed through. There was population with cultivation, herds of cattle, and ponies of a good size, a general look of rough comfort, and much hospitality.

From Ungodhae there was the usual post travelling on fair roads in Telegas *viâ* Biisk and Barnaoul to Tomsk, which was reached at midnight on July 5. I caught the next day's steamer, which reached Tiumen early on the 14th; thence by train to Perm, arriving 9 a.m. of the 16th; caught a steamer just starting, and reached Nijni Novgorod at 10 a.m. of the 19th; whence by train to Moscow and St. Petersburg, and so home by sea to Hull, where landed on July 29.

NOTE ON MR. BORRADAILE'S PAPER.

By NEY ELIAS.

Though Mr. Borradaile's paper is short, it is the record of a very long and, in some respects, arduous piece of travelling. It is not often, nowadays, that a traveller accomplishes a journey of such an extent, in a little-known country, so quietly and unostentatiously as Mr. Borradaile has done, or that the troubles and difficulties of the undertaking are made so light of. The first that is heard of his enterprise is that he has carried it to a successful conclusion, and has returned to England. This is in accordance with the best traditions of exploring travellers, and invites recollections of the great expeditions of Mr. Borradaile's colleagues of the Bombay Civil Service—Mr. A. D. Carey in Eastern Turkistan and Tibet, and Mr. H. E. M. James in Manchuria.

Northern Mongolia lies somewhat out of the range of English travellers, and has been left, for many years, almost entirely to the Russians to explore and survey. Thus it was a Russian savant, M. Yadrinzeff, who first brought to light (in 1889) the ruins of the ancient Uighur and Mongol capital, Karakorum, though Mr. Borradaile has the satisfaction of being the first Englishman to visit them. That he did not make any attempt to examine them closely is only natural, seeing

that shortly before his expedition they had been thoroughly investigated by the Finno-Ugrian Society's party, while the archaic Turki inscriptions, to be found among the remains, had been studied and translated by such masters as Dr. W. Radloff and Professor Thomsen of Copenhagen. Mr. Borradaile, however, rightly appreciates the interest that lies in this ancient centre of the Uighur race, and in the records of their times that have been preserved for some twelve hundred years, in the stone fragments which he saw.

The Uighurs are a people with a history. The early part of it is briefly sketched by the writer of the paper, who tells us of the final ruin that overtook their state in Northern Mongolia, near the middle of the ninth century, in the shapes of famine, pestilence, and crushing defeats at the hands of other Turki tribes—calamities, he remarks, that completely blotted them out. This was the case as far as their kingdom and political unity were concerned, but to kill down a whole people and remove them from the face of the earth, an agency even more powerful than disasters such as these must be called into play. The great destroyer "time" failed, in this instance, to ally itself with the other enemies of the Uighurs; and thus, though their ancient state in the Altai region came to an end, and though their numbers, no doubt, became greatly diminished, the remnant of the people sought a new home, and migrated southward beyond the Gobi. Here, on both the northern and southern slopes of the Transhan, they built up new kingdoms or confederacies of states, known as Bishbalik, Kaochang, Kuitze, etc.—the modern Urumtsi, Turfan, and Kuchar—and gradually rose again to power and influence.

Later, in the twelfth century, their territory extended much farther westward, and a line of Uighur monarchs, known as the Kara-Khans or Ilak-Khans, with their capital sometimes at Balasaghun, on the upper Chu, and sometimes at Urdukand (the modern Kashgar), ruled all Central Asia between Samarkand and the borders of China. In this latest and most westerly kingdom, their chiefs became Musulmans, though the mass of the people seem to have retained Buddhism until, perhaps, within the fifteenth century. They were a cultivated race, skilled in arts and crafts, and much given to literature; and though not sufficiently warlike to hold their own against invaders who, from the twelfth century onwards, overran Eastern and Western Turkistan and the region we know now as "Jungaria," still they were a people who proved themselves hard to eradicate or even to displace. They may be said to live to the present day, in the populations of Eastern, or Chinese, Turkistan, and of the Ili region, and may be regarded as the parent stock of the modern Turkistanis, among whom the old Turki type and language have survived all the vicissitudes that can well befall a nation. These communities of Uighur origin may still number, perhaps, some two millions of people. Though Musulmans,

now, of some three to four hundred years' standing, the territories which they occupied from the ninth century to the fourteenth, as Buddhists, are believed to abound in remains of their religious and sepulchral buildings, and other traces of their ancient civilization, which may, one day, prove as interesting to the historical explorer as those of Karakorum and its neighbourhood.

The journey described above by Mr. Borradaile is not the first that he has made across the Asiatic continent; he had once before travelled from the Pacific to the Baltic, though by a more northern line than the one followed last year. On this second occasion, it will be seen that his route lay to the east and north of the one taken by me in 1872, and that the two only come together at Uliasutai. From that point forward, they were nearly, though not quite, identical. This is the first time, as far as I am aware, that the Chinese settlements of North-Western Mongolia have been visited by any but Russian travellers since 1872; and it is interesting, when reading Mr. Borradaile's description of Kobdo, during summer, and its present flourishing state, to compare it with the condition in which I saw it. It was winter-time then, and winter in the north of Mongolia is not very different to the same season in Siberia. The place, too, had been attacked, only a few days before my arrival, by a force of Tunganis from Manas. The Chinese garrison had been beaten, as a matter of course, and had shut themselves up in the fort, where the enemy, for want of guns, was unable to touch them. The Tunganis had looted and burned the open town, however; while the charred and ruined buildings, the headless bodies of the killed, and the wreckage of household furniture and merchandise, which lay scattered on every side, gave the place, as may be imagined, very little of the aspect of "a well-kept Indian cantonment," which it bore when seen by Mr. Borradaile. Uliasutai was, at that time, in a very similar state of ruin to Kobdo, for it had been attacked and burned, in much the same way, a few months previously; but Mr. Borradaile's paper does not mention the appearance of the eastern settlement after twenty and odd years of peace.

During his rapid journey, Mr. Borradaile was not idle with his camera. He has brought back many interesting views of the scenery of the country he traversed, and of the places he visited—among them some of Karakorum—and many portraits of individual Mongols, which serve to show the type and costumes of the inhabitants.

DR. PENCK ON THE MORPHOLOGY OF THE EARTH'S SURFACE.*—REVIEW.

By Professor CHARLES LAPWORTH, F.R.S.

This welcome work, which is as excellent as it is opportune, forms the latest number of the well-known Library of Geographical Handbooks, edited by Professor Friedrich Ratzel. Commenced by the author more than ten years ago, when the science of Orology or Earth-morphology was practically in its infancy, and growing with the rapid development of the subject which has taken place of recent years, it has all the novelty and freshness of an original essay, and supplies a want which has been keenly felt, not only by geographers, but by geologists.

It is another proof of the tact of the Editor of this Geographical series that he entrusted the writing of a general work upon this subject to Professor Penck, who is as well known as a geologist as a geographer, and whose papers are as warm with scientific enthusiasm as they are masterful in their handling and presentation of their subject-matter. Since the preparation of this work was commenced by the author, two great works have appeared in Germany bearing upon Earth-morphology, namely, Suess' 'Antliz der Erde,' and Richthofen's 'Führer für Forschungsreisende.' The important effect of both these books upon his own work is frankly acknowledged by the author, as is also that of the publications of the great American geologist, Dana, whose grateful scholar the author in his preface subscribes himself. But although the influence of these three authorities is evident throughout the work, it is by no means predominant. Dr. Penck, with all his receptivity, never loses his individuality. He marshals his facts, digests his materials, and draws his conclusions in his own way; and he lights up his results stage by stage, by fresh calculations, observations, and characteristic modes of presentation of the subject-matter, often as bold and ingenious as they are original.

The work is divided into three "Books"—the first treating of General Surface Morphology; the second, of the Land; and the third, of the Sea.

In his Introduction, the author points out that the surface of the land is composed of a series of recognizable *forms*, which vary from sharp mountain battlements to long winding valleys, and by their ever-varying association bring about the special *landscape* characters of different regions. But, varied as are these forms, each is in itself merely a trivial deviation from the general spheroidal Earth-form, the surface of which is typified by the sea-level, and from which, as a datum plane, these minor forms can be measured and combined. Each *form* has a certain

* 'Morphologie der Erdoberflache.' By Dr. Albrecht Penck, Professor of Geology in the University of Vienna. Stuttgart: J. Englehorn. 1894.

size and position, and to fix these we must have recourse to Geodesy. Each has had a special mode of origin, and is now undergoing certain changes, and to understand these we must turn to Geology. But the distribution and combination of the Earth-forms are matters belonging to the science of Geography. Earth-morphology, therefore, is related to three distinct sciences; but in its essence it must be classed as an integral part of geography, regarded as the doctrine of the surface of the Earth.

Tracing the history of the study of Earth-morphology from the days of Varenius down to the present time, Penck shows that the fixation of certain morphological terms in geography is more than a century old, and that the science of geology—which was originally nothing more than a General theory of the Earth—actually engaged itself primarily with the origin of the forms of the Earth's surface. Both Wernerites and Huttonians treated of the subject, but as geology advanced its students turned more and more from observation of form to the study of structure; and it was only by a roundabout path that even geologists at last realized the fact that the surface-forms of the Earth-crust could be explained in a geological way. J. R. Leslie was the first who recognized the connection between inner structure and superficial form, and opposed topography as an *art* to topography as a *science*. To the hint which Leslie gave, Penck ascribes the great success that morphological geography has attained in America, in the works of Gilbert, Dana, and others; and in Britain, in the works of Ramsay and Sir Archibald Geikie. But all such discoveries were the work of geologists, and it is only of late years that geography has availed itself of these advances. To Peschel belongs the credit of having led back geographers to the sphere of genetic morphology. His brilliant essays on the subject were the turning-point in the geographical application of the doctrine of the surface-forms of the Earth. At his incentive "Geography regained a long-neglected heritage." The German geographers who succeeded him rapidly availed themselves of the materials worked out by British and American geologists, and, finally, all the old formal classifications were replaced by the complete genetical grouping proposed in Richthofen's masterly 'Führer für Forschungsreisende;' while French literature has been enriched by De la Noë and Margerie's 'Formes du Terrain.'

This Introduction is followed by a chapter on the form and size of the Earth as a whole, in which Penck gives the latest calculations as to the slight deviation of the true form of the Earth from an ellipsoid of rotation. He shows how the standard sea-level adopted in different countries varies with respect to the selected ellipsoid; and discusses the discrepancies in distances obtained by astronomical and geodetic measurements respectively, and in heights as affected by barometric pressure, refraction, and the like.

Chapter II. is devoted to morphography and morphometry, and the

various forms of the Earth's surface are defined, their peculiar characteristics and their proposed classification sketched in outline. The author considers that these *forms* may be regarded as marked out by their surface slopes, and as limited by the edges formed by the meeting of these slopes. Such morphological units or *form-elements* combine to build up *unit-forms*. Many similar unit-forms occurring in association combine into special *landscapes* or groups. These, again, are subordinate sections of greater complexes, denominated spaces or *areas*. The form-elements, unit-forms, landscapes, and areas constitute, with their innumerable transitions, the morphological types of the surface of the Earth.

After a mathematical treatment of the development of the characteristic lines and surfaces of these Surface-forms, the author next takes up the discussion of the relationships of the land and water regions of the globe. The sea *space* is sharply distinguished from the land *mass*; and their respective sub-aërial surfaces as the *land* and *water areas*. The ratio of water-area to land-area is given as 2·54 to 1; and the fact is pointed out that the reduction of the land area in passing from pole to pole is of such a character that, in any two corresponding zones in the north and south hemispheres taken together, there is generally the same proportion of water to land, the ratio varying from 2·7 to 3·4. The great distinction between the continental *block* and the ocean *room* is trenchantly insisted upon, and the great morphological importance of the land hemisphere as opposed to the water hemisphere is pointed out; but the grouping of the lands around the North Pole is dismissed as of trivial significance. The minor divisions of the land and water areas are next carefully and naturally grouped, and this chapter concludes with a historical summary of the views of others with respect to the so-called geographical homologies and affinities, many of which the author is inclined to regard as valueless, because of the instability of the coast-line.

The author next treats of the vertical development of the Earth's surface; and the *continental* and *abyssal* regions are carefully defined and opposed. The mean surface-level of the Earth-crust is (with reference to present sea-level) calculated at −2435 metres, in place of −2560 as worked out by Dr. Mill, −2900 by De Lapparent, and −2285 by Heiderich. The author points out how the generalized hypsographic curve of the Earth's surface defines the continental plateau as limited exteriorly by the 100-fathom line; and that between this line and the broad and deep abyssal region of the ocean we have, normally, a steep-dividing (septal) slope. This slope he regards as the shore of the continental block, and denominates it the *aktic* (steep shore) *region* of the Earth's surface. He considers that the line of mean-sphere-level runs, as a rule, along the bottom edge of this aktic region; but shows that in some areas the aktic slope is practically undefined, while in others—as off Japan—it descends to the greatest depths of the ocean floor.

In dealing with the areas and volumes of the land and water sections as related to the mean surface-level, Dr. Penck estimates that 200,000,000 of square kilometres occur above that level, and 279,000,000 below; and that $\frac{1}{2000}$ of the Earth's volume must be taken off the continental block and laid upon the ocean floor to bring the surface of the two to a common level.

Assuming, next, that the waters of the globe constitute part of its mass, and regarding them, theoretically, as becoming condensed into a corresponding mass of solid rock, such mass forming a continuous shell exterior to the present mean sphere-level, he calculates that the true *condensation level* of the Earth-crust thus obtained would lie at 1380 metres below the present sea-level, or 1055 metres above the mean crust-level of the present day. He argues in favour of the view that the floor of the ocean has a higher specific gravity than that of the continents; and agrees with those who hold that the present distribution of the land masses has a disturbing effect upon the Earth's axis of rotation.

In the well-worn matter of the doctrine of the permanence of continents and ocean basins, we find the author in general accord with the views of Dana, Murray, Wallace, and others. He points out that the various parts of the present Earth's crust are divisible into relatively *stabile* and *labile* regions. According to his view the grandest stabile regions form the central spreads of the continents, and the central spreads of the ocean deeps; but there are many others of minor consequence. The labile regions are remarkable for rapid variation in surface elevation within short distances (or, in other words, the lability of the Earth-crust is in some way connected with the surface gradient). These labile regions lie, some upon the land, and some below the sea-level, and vary in position in the course of geological time; so that it is probable that within ancient labile regions of the Earth's surface now forming parts of the stabile areas of the continents, portions of old sea-floors have been elevated into land; while in depressed labile regions now sunk below the sea-level, old land surfaces may have been carried down into the depths of the sea. He shows, however, that the continental plateau, considered as a whole, is extremely old, and he adduces mathematical calculations to prove that the ocean depths are probably of like antiquity.

In the second Book, we enter upon the detailed description of the various *forms* recognizable upon the lands of the Earth. The first chapter is introduced by a generalized account of the main features of the land surface, their morphological and structural characteristics, and their mode of origin. The section on regional structural peculiarities is largely geological. We have a short account of the stratified and igneous rock-formations, their disturbances and dislocations. The chief structural types are grouped according as their rocky floors are composed

of stratified or of massive rocks. Of the stratified types we have the *new land*, where the strata are practically horizontal; the undulated or *warped land*; the *schollen land* or fracture-land; and the *fold land*, with its sharp anticlinals and synclinals, over-faults and thrust-planes. The regions composed mainly of igneous material are grouped as the *effusion land* (mainly volcanic), and the *intrusion land* or *stock land* (mainly plutonic). None of these fundamental structure types, however, occur unmodified; but there is a prevalent discordance between the topographical and geological surfaces, brought about by denudation, erosion, deposition, and their associated agencies. From this point to the close of the first division of this second book the author travels over ground more or less familiar to the student in the works of other authors, treating of weathering, transportation, river and glacial action, and the like; but he adds an abundance of novel material, and the whole discussion is clear and adequate.

The succeeding division deals with the endogenous processes—crust-movements, vulcanicity, etc.—and its concluding section is of peculiar interest. The author distinctly leans to the opinion that most of the known facts and phenomena point in the direction of the theory that the cooled Earth-crust rests upon a soft, cushion-like stratum of latent plastic matter, so that it is in a kind of hydrostatic equilibrium. According to this view, the earth is a globe of gas enveloped by an inner magma layer and an outer solid crust. Proceeding from the surface inwards, we should probably meet with a succession of uncertainly bounded states of matter, which might be conveniently typified by glass, shellac, pitch, molasses, oil, water, and gas, each passing insensibly into the next below, and each downward layer being marked by a further increase of temperature.

The processes at work in the genesis of the land-forms having been thus fully discussed, the author next enters upon the detailed description of the actual forms themselves. The *plains* are first described; and in connection with this branch of the subject, a section on the appearance of "*plain formations*" in the geological systems is given, which is certain to become classical. The characters of *uplands*, hills, valleys, and glens are given in great detail; and the mountain features due to erosion, etc., such as plateaux, peaks, gorges, and passes, are all united and explained under the title of *valley landscapes*.

This is followed by a section in which are described the natural *hollows* or *basins* of the land surface—lakes, inland seas, desert depressions, etc.—and great stress is laid upon glacial phenomena and the erosive action of glaciers. A long section is devoted to the characteristics of the *mountain regions* proper. Here we especially trace the influence of the work and opinions of Dana, Heim, and Suess, but the author has largely extended and illustrated their facts and their results.

The last book (Book III.) is consecrated to the study of the *Sea* and

its coasts; to the work of the waves and tides, etc.; to the formation of deltas, coral reefs, and to the secular movement of the coast-line. In the description and classification of coast-lines—as flat coasts, embayed coasts, overlapping coasts, etc.—the author frequently follows Richthofen; largely, however, adding to his materials and opinions. The form of the sea-floor (both that of the shallow seas and of the ocean depths) is treated at length, and much new evidence is brought forward of the extraordinary steepness of some parts of the floor of the ocean basin. In the last chapter the author treats of Islands. He classifies the continental islands into coastal islands, islands of the shallow seas, and islands of the aktic slope. Finally, we have a section upon the oceanic islands proper; and, in the matter of reefs and atolls, the author leans distinctly to the views of Darwin. A summary of the literature of this branch of the subject concludes the book.

Professor Penck's work is an encyclopædia of facts and conclusions, admirably classified and digested; and affords, at the same time, a complete index to the literature of the subject. We hope soon to see an English translation; for it is a book which should be in the library of every working geographer and geologist. We have here endeavoured simply to give a general idea of the scope and bearing of the work, and have not attempted to criticize any of its conclusions. In the science of geo-morphology there are so many novel and interesting facts upon which we can all agree that we may well forget that we do not all of us interpret these facts in precisely the same way. Like all great text-books, Dr. Penck's work will prove a conspicuous landmark, up to which to measure our advance, and from which to estimate the amount of our future progress.

Those fairly acquainted with the subject might, perhaps, be inclined to draw a comparison between Dr. Penck's book and the works of some other authors treating of the same subject. In the arrangement of his materials in the second half of his work, the author closely follows Richthofen's, 'Führer für Forschungsreisende.' But Richthofen's book, scientific and practical as it is, is very different in its aim. In that work the Prince of Forschungsreisende is like a generous host, who frankly exhibits and modestly explains to the guests—his brother travellers and scientists—the rich collections which are the accumulated results of the experience of a lifetime. In reading Suess's 'Antliz der Erde,' we are all of us out together in the great world-field, not only as students, but as companions of the master, sharing in his enjoyment of the crowds of facts as they are successively unearthed, and careless of provisional conclusion in the mean time, in the comfortable conviction that we have but one common object in view, the ultimate discovery of truth. In Dana's works, we are subjugated by battalions of facts, and hurried forward by force of evidence and breadth of conclusion. In Geikie's works on 'Scenery and Geology,'

we are under the guidance of the poet as well as the master, and the driest facts and phenomena grow alive and warm with a kind of human interest; the subject captivates us, not only through our reason, but also through our emotions, and our progress is the more certain because it is instinctive and unconscious.

Dr. Penck's methods certainly approximate most closely to those of Dana, but there is a more conspicuous consciousness of power and closeness of grip, which is personal and characteristic. The author's mind is dominated, above all, by the importance and the unity of his subject. For its speculative or poetic side he has little or no regard. Confident in the rectitude of his aims, and secure in the support of the nation of facts and phenomena at his back, he moves straight ahead to his goal, leaving the pupil to follow or to faint, as his will or his powers may decide.

Which of the four methods is the best it is impossible to say; but certainly, for one who is determined to know all there is to be known on the subject of Earth Morphology, there is no better guide than the work before us.

HYDROGRAPHIC RESEARCH TO THE NORTH OF SCOTLAND.

The Fishery Board for Scotland recently co-operated with the Swedish, Norwegian, German, and Danish governments in making a series of investigations into the physical condition of the Baltic and North Seas, at four periods three months apart. The area assigned to the Scottish investigator had the Shetland Islands as its centre, and included parts of the North Sea, and the great depression of the Norwegian Sea called the Faeröe-Shetland Channel, which is separated from the Atlantic by the narrow Wyville Thomson ridge to the north-west of Cape Wrath. Mr. H. N. Dickson was appointed to carry out a series of soundings, and of temperature observations and salinity determinations at various depths on board the fishery cruiser H.M.S. *Jackal*. His report has recently been published.* It is to be regretted that no special grant was apportioned to the Board when requested by Government to carry out this work, and that its income for scientific purposes is inadequate. Mr. Dickson was thus unable to carry out his investigation with the same completeness as the observers of the other governments engaged in the work. He has, however, made the best possible use of his opportunities, and the result is a valuable contribution to our knowledge of oceanic movements, which is likely to prove of economic as well as of scientific interest.

In the area surveyed, we have to consider the shallow North Sea, with its fresher water modified by the brackish Baltic, and liable to

* *Twelfth Annual Report of the Fishery Board for Scotland*, Part iii., "Scientific Investigations," pp. 336–382.

considerable seasonal variations; the deep, cold mass of the Norwegian Sea; and the warm Atlantic waters. The general circulation is conditioned by many complex factors, amongst which may be enumerated—(1) configuration of the sea-bottom, (2) tide, (3) wind, (4) temperature, (5) salinity; the two last combining to determine the specific gravity of the waters. Mr. Dickson agrees with Professor Mohn in assigning a cyclonic, or counter-clockwise, circulation to the waters of the Norwegian Sea, but differs from him in his description of the currents in the Faeröe-Shetland Channel. The water in the Norwegian Sea, moving in a direction against watch-hands, impinges on the steep slopes of the continental plateau to the north of Shetland, and is divided, one part continuing the cyclonic motion, another part being deflected into the Faeröe-Shetland Channel, up which it passes as a cold under-current until it encounters the Wyville-Thomson ridge. Over this bank the Atlantic water flows as a warm upper current, impelled by the wind especially in winter, and by its greater temperature, and consequently higher level, than the colder Norwegian water. The motion of this current over the ridge draws up the colder water from below, and a mixing of the two results, which is more rapid as the surface current is the speedier and consequently more of the under water drawn up. In warm and windless summers, this Atlantic water, deflected by the rotation of the Earth, accumulates to the north-west and north of the Shetlands and tends to mix with the water of the North Sea. Such a mixture is facilitated at all seasons of the year by the tidal currents, which partly flow between the Orkneys and Shetlands, carrying surface water with them, and partly skirt the west of the Shetlands, an eddy being formed between the two streams, into which North Sea water is drawn. In winter and spring, tidal action alone brings about this penetration of the Atlantic water into the North Sea, as the fresher North Sea is really heavier than the Atlantic water, owing to its greater coldness. In summer the supply of fresh water is less, but the surface is warmed sufficiently to give it a lower specific gravity than the colder under-layers. This complex mass, consisting of a warmer, salter surface layer and colder fresher layer below, meets the Atlantic water and mixes, the upper water becoming cooler and salter, the lower warmer and salter, whereas the Atlantic waters are warmed and freshened above, cooled and freshened below. When the saltness of one water and the coolness of another combine in the most marked manner, an axis of maximum specific gravity results, which in May and June runs north-east from the Shetlands, then turns to a north and south direction, and moves further to the east later on, until about the end of September, when the winter conditions begin to prevail. This axis of dense water allows Atlantic water to come round the north of the Shetlands, and determines its spread along the east coast of Scotland during July and August.

Mr. Dickson does not tell us in this paper about the relation between

this periodic influx of Atlantic water round our east coasts and the periodic migrations of herring. We believe some connection between the two has been suggested; at any rate, it seems a profitable direction in which to continue this important national research. Should such a relationship be proved to exist, there would be no difficulty in ascertaining the proportion of Atlantic water roughly at any time, as it is bluer in colour than that of the North Sea. A simple colour-tester has been constructed by Forel, which would enable a fisherman to readily distinguish regions where the Atlantic water was largely present, and this Mr. Dickson has used with satisfactory results.

A satisfactory result of elaborate density-determinations of water samples collected by him on his four cruises, and examined by Mr. Anderson at the Scottish Marine Station, is that the hydrometer is a reliable instrument for ascertaining specific gravities at sea, if proper precautions are observed. This is important, as it restores confidence in the innumerable density observations of the *Challenger* and other expeditions from which the maps of distribution of salinity for the oceans have been prepared.

Mr. Dickson's work is an important contribution to oceanography, and, when taken together with the monumental researches of Professor Pettersson and his colleagues,* promises at last to place our knowledge of oceanic movements near our own coasts on a satisfactory footing. We must specially commend the admirable isothermal maps of the water-layers at different planes of depth, which throw much light on the circulation of this part of the ocean, and in themselves are no small contribution to physical geography.

THE "ANTARCTIC'S" VOYAGE TO THE ANTARCTIC.

By C. EGEBERG BORCHGREVINK.

WHEN the steamer *Antarctic* left Melbourne in September last for a whaling cruise in the Southern Seas, she carried with her Mr. C. Egeberg Borchgrevink, who was desirous of making a scientific expedition to those latitudes. This gentleman had endeavoured to obtain a passage on board, but, being unable to do so owing to lack of accommodation, he shipped as a seaman. During the voyage, however, every assistance was afforded him in his scientific labours, and at a meeting of the Royal Geographical Society of Australasia in Melbourne on March 19, he read an interesting paper, of which the following summary has been sent to us:—

The *Antarctic* left Melbourne on September 20, 1894, and we dropped anchor at Hobart on October 2. We left that harbour the following day, and it was originally our intention to spend a few weeks in search of sperm whales off the south-west cape of Tasmania. Not meeting with any, we steered for Royal Company Island. On the 18th we had snow on board for the first time. It came in heavy squalls, and brought a large specimen of *Diomedea exulans*, or large albatross, on board, where it took refuge until the weather cleared. At night it was moonlight, with a

* *Scottish Geographical Magazine*, 1894, *passim*.

completely clear sky, and at twelve o'clock the Aurora Australis was visible for the first time. With white shining clouds, rolling from west towards east, it formed into a shining ellipse, with an elevation above the southern horizon of 35°.

The *Antarctic*, being at the time at the vicinity of Macquarie Island, and thus in lat. of about 54°, the aurora seemed constantly to obtain its light-force from the west, and the intensity of its light-cloud culminated in strength every five minutes. After the lapse of that time it suddenly died out, to regain its former magnificence and beauty during the succeeding five minutes. Upon our primitive compasses I could discover little or no influence that night, and the phenomenon lasted until 2 o'clock, when it was gradually lost in an increasing mist. As the swell was heavy, and as there was little probability that any material benefit would be the result of landing, we set out for Campbell Island on the 22nd, and dropped our anchor in North Harbour on the eve of October 25, shifting the following day down to Perseverance Harbour to fill our water-tanks, and to make final preparations before proceeding south. Campbell Island shows from a great distance its volcanic origin and character, undulating ridges rising in numberless conical peaks from 300 to 2000 feet above the sea-level. Although the island seems desolate enough from the sea, the land around the base is rich in vegetation. While there hunting for ducks, which were about in great numbers, I came upon three snipe (*Gallinago Australis*), which I succeeded in securing.

We weighed anchor on October 31, and, when close to the south shore of the island, we sent a couple of boats in search of seals. On this occasion one of the boats was swamped in the surf and immediately crushed against the rocks, its crew having a rather narrow escape from drowning. During the next few days, proceeding further into the fifties, the air and the water kept in equal temperature, 44° Fahr. A large number of penguins were seen, jumping about like small porpoises. We met several icebergs from 100 to 150 feet high. These bergs were a solid floating mass of ice with perpendicular walls, and formed an unbroken plateau on the top.

On the 6th, in 58° 14′ lat. and 162° 35′ E. long., we sighted an immense barrier of ice or chain of icebergs, extending no less than about 40 to 60 miles from south-east to north-west, or in fact as far as the eye could reach, the highest point being somewhat over 600 feet. This barrier was of a dark greyish colour, and at a distance much resembled land. Several icebergs, similar to those we had met before, were floating about in all directions, and were undoubtedly children of this enormous monster. It was here that we discovered that our propeller was out of order; the news came as a fearful blow to all of us. Such an accident when amongst the ice on the preceding day might have proved fatal, as at one time we had to carry a press of sails and set the engines at full speed to manage to clear our way between two large bergs. Not judging it prudent to proceed amongst the ice with the vessel in so crippled a state, the *Antarctic* was again headed northwards; and, favoured by strong gales from south-east, we anchored in Port Chalmers on the 18th, where the damage was soon repaired. Having got some fresh hands from Steward Island, we stood again southwards on November 28. Favourable winds, with the barometer about 29 inches, continued till we again reached the fifties. By the time we reached 55°, the albatross had left us, and likewise the Cape pigeon (*Daption capensis*), but the white-bellied storm petrel still followed in our track. A lestris (skua), with dark brown head and white-bordered wings, and a small blue petrel, put in an appearance; I longed to be able to secure one of these birds, but never had an opportunity. On December 7 we sighted the edge of the pack-ice, and shot our first seal, which was of the common grey kind, its skin being injured by several deep scratches. We had a very strong snowfall, and the vessel was for the first time covered with snow on deck and the rigging. On December 8,

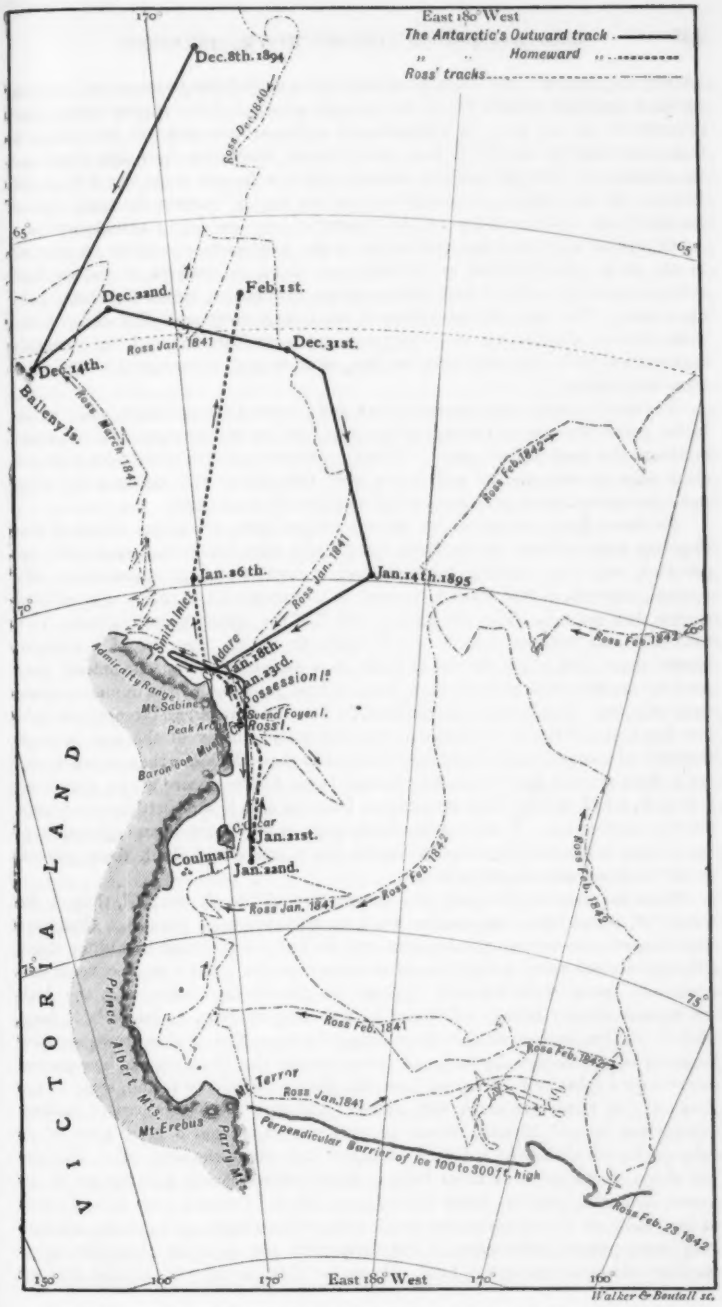


CHART (FROM THE ADMIRALTY CHART) TO SHOW THE TRACK OF THE "ANTARCTIC."

lat. 62° 45′, long. 171° 30′ E., large streams of ice were drifting around us; a strong ice-blink appeared towards the south, and the presence of the elegant white petrel (*Procellaria navea*) gave us unmistakable evidence that now we had before us those vast icefields into which the gallant Briton, Sir James Ross, fifty years ago, on January 5, 1841, successfully entered with his famous ships the *Erebus* and *Terror*. In the evening we slowly worked our way in between the large floes of the outer edge of the pack-ice, which consisted of large and heavy hummocky ice.

Of marine animals, I saw multitudes of the *Argonauta antarctica* everywhere in the pack, usually found to be swimming about in cavities in the ice-floes, evidently seeking a refuge from their enemies, the whales, which feed principally upon them. The large finned whales, or what in Norway are called blue whales, were spouting about in all directions; but, not being fitted out with the necessary appliances to kill these monsters, we had, after several unsuccessful attempts, to leave them alone.

The white petrels were numerous here, and I secured some of them. The white-bellied petrel departed at the edge of the pack, leaving the icy regions to its hardier brethren, the black-bellied petrel. We shot several seals, but they were scattered about only sparsely, and we seldom saw more than one or two together, and never more than seven, most having scars and scratches in their skins.

Sir James Ross noticed similar wounds on the seals, and it was supposed that they had been inflicted by the large sharp tusks with which the sea-leopards are provided, and these wounds were received in battles amongst themselves. My opinion, however, is that these scars must be traced back to an enemy of a different species than the seal. The wounds are not like the ordinary cuts inflicted by a tusk or tooth; varying from 2 to 20 inches in length, they are of a straight, narrow shape, and where several of these cuts were together on one animal, they were too far from each other to have possibly been produced by the numerous sharp teeth of a seal. The wounds went always far into the blubber, and sometimes right into the flesh. That this unknown and destructive enemy of the seal in those waters is of a superior and more dangerous kind than the seals themselves, I conclude from the fact that the wounded seals never had any scars about their head and neck, which undoubtedly would have been the case if any battles were fought amongst themselves. If my opinion holds good, it may serve as an explanation of the strange scarcity of the seals in regions where one would think these animals should be found almost everywhere.

When we entered the pack the temperature of the air was 25°, that of the water 28°, which latter temperature was kept all through the pack-ice. Penguins were in great numbers on the ice-floes, and we had no difficulty in killing them, although we had many a hard race after them over the usually snow-covered ice-floes, and many were the cold dippings we got for their sake. On the 14th we sighted Balleny Island, and found it, according to Ross, in lat. 66° 44′, long. 164° E. Several seals were shot there during the day. The ice-floes grew gradually larger as we approached the land, and it was evident that the ice-packs now around us were for a great part discharged from the glaciers of Balleny Island, some of the floes carrying stone and earth with them. Although the higher part of Balleny Island was covered in mist, when we were near it we got a good view of its lofty peaks, which rise to a height of 12,000 feet above the sea-level. The size and shape of the ice-packs about Balleny Island offered considerable danger to our vessel, and many anxious hours did we spend there. Covered with several yards of deep snow on the comparatively small surface above water, and running out into long sharp points under water, in our battle with the elements they were to us monitors of a most destructive kind. Several of them struck our propeller without

injuring it seriously, but it is not likely that a vessel depending entirely on its sails would have been able to exist long in such ice, and even with steam we felt how small and powerless we were in its merciless grasp.

The temperature at Balleny Island was found to be—in the air, 34°; water, 28°. Finding the packs so impenetrable at this locality, we resolved to seek eastwards to the track where the *Erebus* and *Terror* had been navigated so successfully. On December 16 we moored the *Antarctic* to a large floe of pancake ice, which told its tale about the previous long calm. As far as our eye could reach, nothing but one immense field of ice could be seen. During the afternoon an increasing swell made our position unsafe, the huge ice masses rising and falling with long slow movements, and the sudden shocks that the side of our vessel received causing her to tremble from keel to crow's nest. On December 22, in lat. 66° 3′, long. 157° 37′ E., barometer at 29 inches, I shot a wonderful seal, of ordinary size and colour, but without any signs of ears, and with a very thick neck. Not one of our experienced hands on board had ever seen this kind before, and I regret to say that the skull, which I had prepared, was accidentally crushed.

On December 24, in lat. 66° 3′, long. 167° 37′ E., there was stormy weather. The evening, however, was beautiful, and the sun just touched the horizon on its lowest descent. I believe that we are the only people who ever saw the midnight sun at Christmas Eve. On Wednesday (26th) we crossed the Antarctic circle. On the 28th our chief engineer, Mr. Johanson, had the misfortune to break one of his legs and seriously damage his hand. He was, however, fixed up as well as possible by the poor medical skill at hand; and I am very glad to say that he at present is getting on all right. New Year's Eve we were in lat. 66° 47′, long. 174° 8′ E., at 12 o'clock. While the sun was shining bright, we rang the old year out and the new year in, and saluted with our guns in honour of the occasion. In lat. 67° 5′, long. 175° 46′ E., I secured a specimen of *Aptenodytes Forsterii*, a large penguin. On the 14th, in lat. 69° 55′ S., long. 177° 50′ E., we came again into open water, having spent thirty-eight days in working our passage through the pack-ice. A clear open space of water was now before us, and not a breath of wind disturbed the surface of the sea. The only sign of ice was a small piece in the shape of a boat, on which four penguins leisurely appeared to be rejoicing like ourselves in the splendid weather and beautifully clear skies.

We steered straight for Cape Adare, on Victoria Land, which we sighted on January 16. On the 18th, in lat. 71° 45′, long. 170° 18′ E., the temperature of the air was 32°, and of the water 30°; the sky was completely clear. At noon we stood towards a bay to the north-west of Cape Adare. The cape, which was in 71° 23′ and 169° 56′ E., rises to a height of 3779 feet, and consists of a large square basaltic rock, with perpendicular sides. From there we saw the coast of Victoria Land to the west and south as far as the eye could reach. It rose from dark, bare rocks into peaks of perpetual ice and snow, 12,000 feet above the level of the sea, Mount Sabine above the rest standing out shining in the rays of the midnight sun. Conical tops covered the plateaux and ran over in mighty glaciers. I counted as many as twenty glaciers in the close vicinity of the bay at Cape Adare. One of them seemed covered with lava, while a thick layer of snow appeared underneath resting on another layer of lava, and that again on the billowy surface of the glacier. A volcanic peak about 8000 feet high, which was comparatively free from snow, had undoubtedly been in activity a short time ago.

At noon of the 18th we sighted Possession Island, with its peculiar contours standing sharply against the bright sky. We effected a successful landing on the North Island, pulling our boat up on the shore, and were at once furiously attacked by the penguins, which covered the very ground of the island in myriads, and

seemed much annoyed by seeing us intruding on their premises. Their hoarse screams filled the air, and it was with considerable strain of my voice that, on landing, I addressed my countrymen in a few words, informing them that we were the second party to set foot on this island. Sir James Ross had preceded us, having fifty-four years ago landed here and planted the English flag. We gave three cheers for that great British navigator, and also for Captain Svend Foyn, who so bravely sent out this present Antarctic expedition.

The penguins had half-grown young ones, and were often attacked by a grey lestris, which sailed about in large numbers. So bold was this bird that several times I had to use my stick in self-defence. The ground on the island was covered with a deep layer of guano, which in time might prove valuable to Australia. I have brought a sample of it to be analytically tested. The island consists of volcanic vesicular lava, rising in the south-west in pointed peaks of 3000 feet in height. To the west it slopes gently upwards, forming a bald and conspicuous cape, which cape, not being named by Sir James Ross, was left to me to christen. I gave it the name of Sir Ferdinand von Mueller. I quite unexpectedly found vegetation on the rocks, about 30 feet above the sea-level, and I think vegetation never was found before in so southerly latitudes. I have reason to believe that this cellular and cryptogamous plant is a lichen.

Possession Island situate in lat. 71° 56′, long. 171° 10′ E., was remarkably free from snow. I judged this island of the group to be 300 to 350 acres in size. We gave it the name of Sir James Ross Island. On the 20th we steamed southward, and sighted Coulman Island on the 21st at midnight. Finding the eastern cape of this large island unnamed, we called it Cape Oscar, in honour of his Majesty our king, whose birthday it happened to be that day. Off Coulman Island we found great irregularities in our compasses, and doubtless that island contains secrets of scientific value. On the 22nd we were in 74° south. No whales appearing, it was decided to head northwards again, although we all regretted that circumstances did not permit us to proceed further south. On the 23rd we were again at Cape Adare, and successfully effected a landing, being the first human creatures who ever put foot on the mainland. Our landing-place was a sort of peninsula or landslip, gently sloping down from the steep rocks of Cape Adare until it ran into the bay as a long flat beach, covered with pebbles. This peninsula forms a complete breakwater for the inner bay. The penguins were, if possible, even more numerous here than on the Possession Islands, and they were discovered on the very cape, as far up as 1000 feet. These birds seem to lead a strange sort of life. They must often live for days without food, for it must necessarily take them two or three days to reach up to the height of 1000 feet up on the rocks, where some of them were nested, and as the *Argonauta antarctica* and fish form their food, it is evident that these birds in some way can store away food for days.

Having collected specimens of rocks, and found the same cryptogamic vegetation here as on the Possession Islands, we again pulled on board, considerable difficulty being experienced in regaining our vessel through some heavy drifts having come between us. We now stood northwards, and on the 26th, in lat. 69° 52′, long. 169° 56′ E., we again ran into the pack-ice. The following day we shot fast in a small finned whale, whose flesh makes an excellent dish. On February 1, in lat. 66°, long. 172° 31 E., we ran into open water again, having this time only spent six days in the pack-ice. On the 17th the Aurora appeared, stronger than I ever saw the Aurora in the north. It rose from south-west, stretching in a broad stream up towards the zenith, and down again towards the eastern horizon. The phenomenon had this time quite a different appearance from that we saw on October 20. It presented now long shining curtains rising and falling in wonderful shapes and

shades, sometimes seemingly close down to our mast-heads, and it evidently exerted considerable influence upon the magnetic needle in our compass.

In lat. 44° 35′ and long. 147° 34′ E. we met with a great number of sperm whales. We hunted them in our boats, and secured one. After struggling for several days with a furious storm of distinctly cyclonic character, we sighted the coast of Tasmania on March 4, and entered Port Phillip Heads on the 12th, five months and a half after our departure from Melbourne.

THE ELEVENTH GERMAN GEOGRAPHICAL CONGRESS.

THE Deutsche Geographentag, or Congress of German geographers, was originated in 1881 at Berlin, and until 1887 it met annually, the places of meeting being Halle, Frankfurt-am-Main, Munich, Hamburg, Dresden, and Karlsruhe. Since then the meetings have taken place once in two years, in Berlin, Vienna, Stuttgart, and this year at Bremen. The objects of the Geographentag are given by Dr. W. Wolkenhauer in an article in a local newspaper, as (1) to give expression to the present position of geographical knowledge and effort; (2) to give fresh stimulus to geographical studies; (3) to thereby exert a deepening and widening influence on geographical education; and (4) to promote intercourse between geographers, and afford an opportunity for the growth of personal friendships. The objects are thus in the main educational and social; and the German meetings are distinguished from the annual gatherings of travellers at Section E of the British Association, and the annual reunion of geographical societies in France, by the preponderance of the University and educational element. The average attendance at each Geographentag is about 500.

The Free and Hanse town of Bremen, at which the eleventh meeting was held, from April 17 to 19 this year, is itself of great geographical interest. It is a municipal republic within an empire, a seaport and commercial town of European importance, combining the memory of the past in its ancient buildings with the highest achievements of the present in harbour-engineering and electric traction; and its ancient ramparts, converted into a ring of stately public gardens, intersect the town, giving it a variety which could never be anticipated from the flatness of its site. The meeting was combined with a gathering of German meteorologists, and it occurred at the proper time to celebrate the twenty-fifth anniversary of the Bremen Geographical Society. This society, so favourably known amongst geographers on account of its admirable journal, *Deutsche Geographische Blätter*, was the outcome of the interest in Arctic exploration which has always been strong in Bremen, and Polar discovery has occupied a prominent place in its proceedings from the beginning. It was, therefore, peculiarly appropriate that the first business before the Geographentag on Wednesday morning was a paper on "Antarctic Discovery" by the veteran Dr. Neumayer.

In his address, Dr. Neumayer gave a short account of the expeditions which have taken place to high southern latitudes; and he dwelt particularly on the fact that the theories of Gauss with regard to terrestrial magnetism had afforded the needed stimulus to Antarctic research in the fourth decade of the century. It is impossible that the wider scientific conceptions of the present day can fail to make a renewal of Antarctic exploration profitable to the highest good of the civilized world. How strongly he feels on this subject, Dr. Neumayer said, can be gauged from the fact that he has urged the importance of renewing Antarctic work unweariedly—at Berlin in 1886; at Heidelberg in 1889; at Bremen in 1890; at Nuremberg in 1893; at Vienna in 1894. The main scientific importance of such

investigations will lie in the fields of meteorology, geodesy, and magnetism; and the full discussion of the subject being arranged for at the Sixth International Geographical Congress between the geographers of all nations may be hoped to lead to some result. One of the first essentials for discussion is the preparation of a large-scale map showing all information up to date. Herr von Haardt zu Hartentum had compiled the map required, which was exhibited in the hall. Dr. Neumayer concluded with an appeal to German geographers and men of science to support him in his efforts to promote south polar discovery.

Dr. E. von Drygalski followed with a paper on "South Polar Discovery and the Ice-problem." Relying on his experience of three years in Greenland studying the various forms of Arctic ice, he explains how the arrangement of the crystals in the mass of ice varied with its origin: in sea-ice the principal axes of the crystals are parallel to the freezing surface, in fresh-water ice the axes are perpendicular to the surface, and in glacier-ice they have no particular orientation. As to an Antarctic expedition, he believed that to send out two ships meant to send out two separate expeditions, and that one vessel could produce very valuable results. Dr. Vanhöffen, of Kiel, read a short paper on the zoological and botanical bearings of south polar research, and in the general discussion which followed, Herr Friedrichsen, of Hamburg, mentioned the efforts made by the Royal Geographical Society to promote a British expedition, and stated that a Belgian merchant had promised £12,000 for a Belgian expedition. He also announced that a German expedition was being planned at an estimated cost of £10,000 for one year's work in one ship, and said that the *Jason* would be available in September this year. Professor Neumayer, in answer to a suggestion that scientific exploration might be combined with seal or whale hunting, declared emphatically that such a combination was absolutely fatal to success in scientific work. Confidence was expressed that the money would be forthcoming, and that an expedition would be sent out.

The afternoon sitting on Wednesday was devoted to school geography, Dr. Lehmann commencing by a paper on the "Educational Value of Geography." He insisted more particularly on the educational value of geography as explaining the causal relations of isolated facts. There was an animated discussion. Dr. A. Oppel, of Bremen, gave a dissertation on the use of pictures in geographical teaching, but it is curious to notice that, while recommending the use of wall-pictures and discussing the relative merits of etchings, engravings, oil-colours, and water-colours, he said nothing of photographs or lantern-slides. Dr. Rohrbach, of Berlin, urged that an agreement should be come to by the producers of educational maps, to extend Mercator's projection to the same latitude south and north. In the conjoined meteorological meeting Dr. Berson gave a valuable paper on scientific ballooning, and Professor Hellmann on the yearly periods of storms in Europe.

On Thursday morning Count Götzen gave a graphic account of his recent journey across Africa.* Dr. Hermann Wagner read a paper on the "History of Cartography," with special reference to the series of historical charts shown in the exhibition. He dwelt chiefly on the early compass-maps of the Mediterranean, showing how they distorted the axis of that sea, and how they prepared the way for the use of Mercator's projection. He also treated very fully of the scales employed, especially the value of the sea-mile.

Professor Krümmel, of Kiel, presented a valuable discussion of the utilization of observations made on the war-vessels and merchant ships of all nations for oceanographical purposes. The ship's Journals containing these observations, which are purely voluntary, are sent in to a central authority in each country—the

* See p. 354 of this volume.

Deutsche Seewarte in Hamburg for Germany, the Meteorological Office in London —and since the enormous strides in the practical applications of such data made by Maury in the United States, the governments of most maritime countries have issued charts of winds, temperature, currents, etc. He pointed out a startling discrepancy between the willingness of German and British captains to undertake oceanographical observations at sea. In the Deutsche Seewarte 7990 full ships' Journals were accumulated by the end of 1894 against 6000 in the British Meteorological Office, and 425 are received yearly in Hamburg as compared with 175 in London. Add to this the fact that 20,000 British ships are at sea for 3500 German vessels, and it appears that in the last twenty-five years the German sea-captains have been twelve times as active in oceanographical work as the British. Professor Krümmel stated that oceanography had been claimed as a peculiarly English branch of science, and complained that in England non-British work is ignored. An admirable feature of the Deutsche Seewarte is the opportunity it gives to young scientific men fresh from the University to pursue special researches with the material accumulated in its archives. Several important oceanographical memoirs have recently been published in this way. Professor Börgen, of Wilhelmshafen, communicated a paper on the "Tides."

In the afternoon the meeting took the form of an excursion in Bremen, visiting the Cotton Exchange, the historic Rathaus (the upper hall of which contains fine models of ancient Hanseatic trading ships), a tobacco warehouse, and a rice-mill, typical of the principal industries of the town. The warehouses of the North German Lloyd steamers were also shown to the excursionists, and the afternoon concluded with a trip on a special steamer from the Free Harbour.

On Friday the last meetings of the Geographentag took place, when Herr Bücking, of Bremen, described the engineering works undertaken for the improvement of the river Weser from Bremen to the sea. Dr. B. Tacke spoke of the economic importance of the moors of North-West Germany, a subject rendered the more interesting by the fact that an excursion had been arranged to visit Wörpedorf, where one of the most flourishing moor-farms is found. Professor Buchenau, of Bremen, concluded by describing the East Frisian Islands and their flora. The reports of several committees were presented.

An admirably arranged exhibition was displayed in the rooms of the Kunstler Verein, where the Geographentag meetings were also held. While some of the subjects, such as models of ships and of buoys, were only of incidental geographical interest, the remaining exhibits were of great value. We have only space to give in outline the divisions in which the exhibits were arranged. The first chief group was divided into (1) nautical exhibits comprising models and instruments; (2) Professor Wagner's historical collection of sea-charts, from the thirteenth to the eighteenth century, specially illustrating the acceptance of Mercator's projection, and of the minute of latitude as the sea-mile; (3) an exhibit by the Deutsche Seewarte of works on maritime meteorology and oceanography, in which, however, the records of British and American expeditions were not included; (4) Herr Dietrich Reimer's exhibit of the German official charts and sailing directions; (5) old maps of the Weser; and (6) models and plans of the Weser and its various harbour-works. In the last section a very striking feature was the model of the Weser from Bremen to Jungfernbake on the scale of 1: 10,000. The second chief group consisted of literary and artistic geographical works, including maps, globes, and pictures. Its subdivisions were (1) the exhibit of Dietrich Reimer (Hoefer and Vohsen), Berlin; (2) that of Justus Perthes, Gotha; (3) maps and atlases by different exhibitors, arranged systematically as (*a*) school wall-maps; (*b*) large-scale maps of high precision; (*c*) maps for practical use; (*d*) school atlases; (4)

geographical books classified according to subject; (5) apparatus for geographical work; and (6) geographical pictures and photographs. The third chief group was the regional geography of Bremen and the lower Weser, including (1) a historical series of plans of Bremen; (2) pictures of Bremen, and eleven other subdivisions. The total number of exhibits was 1575, and the catalogue was very full and clearly arranged.

On an English visitor the impression made by this meeting of geographers was that in the "intensive" geographical research of the present day the chief success must attend the nation which gives the highest place to geographical education, just as surely as the foremost position in the wider exploration of the globe inevitably fell to the country which threw itself most heartily into foreign trade and distant adventure.

The social aspects of the meeting were of the pleasantest; there was cordial hospitality without restraint, and the foreign visitors, at least, will never forget the banquet, with its gift of priceless wine from the municipal cellars, the enthusiastic informal evening in the Rathskellar, and the princely liberality of the North German Lloyd Company on board their steamer *Habsburg*, which carried a large party of geographers from Bremerhafen to Heligoland.

THE MONTHLY RECORD.

THE SOCIETY.

Royal Medals and other Awards for 1895.—The Royal Medals for this year for the encouragement of geographical science and discovery have been awarded as follows: The Founders' Medal to Dr. John Murray for his services to physical geography, and especially to oceanography during the last twenty-three years; for his work on board the *Challenger*, and as Director of the *Challenger* Commission, and Editor of the *Challenger* Publications. The Patron's or Victoria Medal to the Hon. George N. Curzon, M.P., for his travels and researches in Persia, in French-Indo China, in the Hindu Kush and Pamirs, and his investigation of the source of the Oxus. The Murchison Grant has been awarded to Mr. Eivind Astrup for his journeys with Lieut. Peary across Greenland, and his journey along the shores of Melville Bay; the Back Grant to Captain C. A. Larsen for his Antarctic voyage in 1894; the Gill Memorial to Captain J. W. Pringle, R.E., for his work in connection with the Railway Survey operations in British East Africa; the Cuthbert Peek Grant to Mr. G. F. Scott Elliot for his exploration of Mount Ruwenzori and the neighbouring region. The three honorary corresponding members chosen are—Senhor Luciano Cordeiro, Secretary of the Lisbon Geographical Society; Professor J. K. F. Steenstrup, Danish geologist and explorer of Greenland; and Professor E. Levasseur, Professor of Geography in the Collége de France, Paris, and President of the Paris Commercial Geographical Society.

The Sixth International Geographical Congress.—The preparations for the Congress are progressing rapidly. Increased accommodation for the Exhibition has been secured at the Imperial Institute, and the

organization of different departments of the Exhibition has been undertaken by competent authorities. Mr. Ravenstein is preparing the historical collection of maps, which will include some entirely novel features; Mr. John Coles has practically completed arrangements for a very representative selection of geographical instruments and travellers' equipments; and Mr. John Thomson is preparing a collection of portraits of geographers and views of scenery. The Geographical Societies of Berlin, Paris, and St. Petersburg are co-operating in the heartiest manner, and the promises of membership from the Continent are most encouraging. There is every reason to believe that the London meeting will be one of the most impartially international gatherings in the history of the Congress. The Fellows of the Royal Geographical Society have taken upon themselves the responsibilities of receiving their foreign friends worthily, the sum subscribed or promised by them and by other generous members of the public and public bodies now amounting to over £2500. Offers of personal hospitality to foreign members are being daily received by the secretaries. London will not be alone in welcoming the geographers of the world. Receptions to a number of the delegates and foreign members are being arranged by the Geographical Societies of Manchester and Liverpool; while excursions will also be made to Edinburgh, Newcastle, to the university towns of England, and many other places of interest. A circular will be issued before the end of May to all whose names have been sent in to the secretaries, and copies will be forwarded free on application to any one who applies for them. This circular will give full particulars as to the arrangements which have been concluded, and will be followed at an early date by a provisional programme of the meeting. From the Washington Letter in the last number of the *Bulletin* of the American Geographical Society, it appears that at a meeting of the new federation of scientific societies in Washington (including the National Geographic, the Anthropological, Biological, Chemical, Entomological, Geologic, and Philosophical Societies), action was taken with the view of inviting the Congress to hold its next meeting in Washington. Any persons wishing to propose resolutions with regard to international work in geography, with reference to geographical definitions or any similar matter, are requested to give immediate notice in writing to the secretaries of the Congress at the Royal Geographical Society, 1, Savile Row, London, W., to whom all inquiries may be addressed. As there are many and increasing demands on the time of the secretaries, it is hoped that information may be applied for by letter, except when a personal interview is really necessary.

ASIA.

Formosa.—Under the new *régime* initiated by the recent treaty between China and Japan, our knowledge of the island of Formosa may be expected before long to become considerably extended. Inhabited in great part by uncivilized

aboriginal tribes, about which our information is still very imperfect, it is only in the western part, colonized within the last two hundred and fifty years by the Chinese, that journeys have been made by Europeans into the interior. Early in the seventeenth century the Dutch established themselves on the island, and to them we owe one of the earliest accounts of it, written by the pastor, G. Candidius, in 1637, and subsequently published in English in the first volume of Churchill's collection of voyages. The Jesuits collected information with regard to the island, about which Klaproth also wrote, while in modern times various descriptive accounts have been given in the publications of the R.G.S. and elsewhere. Of the papers which have appeared in this country, we may mention those by R. Swinhoe (*Journal* R.G.S., vol. xxxiv.), J. Thomson (*Id.*, vol. xliii.), J. Morrison (*Geographical Magazine*, October, November, and December, 1877), M. Beazeley (*Proceedings* R.G.S., January, 1885), G. Taylor (*Id.*, April, 1889), Professor de Lacouperie (J.R.A.S., vol. xix. part 3, 1887), A. R. Colquhoun (*Scottish Geogr. Mag.*, 1877), besides various Foreign Office Consular Reports, of which that by Mr. Hosie (Commercial, No. 11, 1893), dealing with its resources and trade, is of special value. During the cruise of the *Marchesa*, Dr. Guillemard visited the eastern and northern coasts, making a short excursion into one of the openings in the magnificent precipices of the former, and he devotes the opening chapter in his book to an account of his visit. The island was included within the sphere of operations of the Jesuit survey of China, and a map was published by D'Anville in Duhalde's account of that country. The coasts have been surveyed by the British Admiralty, but, with the exception of sketch maps illustrating the papers above mentioned, there are few dealing with the interior. The positions of the principal towns and villages may, however, be seen on a map published at Shanghai, in 1894, by R. A. de Villard, but in this many of the names are given only in Chinese characters. The northern extremity was surveyed and drawn on a large scale by J. W. Patersson, of the Chinese Customs Service, in 1882.

Dr. Waddell's Researches on Lamaism.—In the introduction to his newly published book, 'The Buddhism of Tibet,' Surgeon-Major L. Austine Waddell gives a short account of his preparations for the study of the religion of Tibet, which strikingly illustrates the possibilities of exploration in that little-known land. It may be argued that a study in comparative religion lies beyond the scope of a geographical journal; but we hold that geography is concerned with the elucidation of all departments of knowledge in countries that remain for the most part unknown, for the same reason that geography is to be advanced by the utilization of the results of all sciences tending to explain the relation between land and people in countries that have been fully studied. The following extract from the preface of Dr. Waddell's book shows how, after studying Buddhism in Burma, Ceylon, Sikkhim, Bhotan, and Japan, he pursued his investigations in the borderland of Tibet: "On commencing my inquiry I found it necessary to learn the language, which is peculiarly difficult, and known to very few Europeans. And afterwards, realizing the rigid secrecy maintained by the Lamas in regard to their seemingly chaotic rites and symbolism, I felt compelled to purchase a Lamaist temple with its fittings; and prevailed on the officiating priests to explain to me in full detail the symbolism and the rites as they proceeded. Perceiving how much I was interested, the Lamas were so obliging as to interpret in my favour a prophetic account which exists in their scriptures regarding a Buddhist incarnation in the West. They convinced themselves that I was a reflex of the Western Buddha, Amitābha, and thus they overcame their conscientious scruples, and imparted information freely. With the knowledge thus gained, I visited other temples and monasteries critically, amplifying my information, and engaging a small staff of

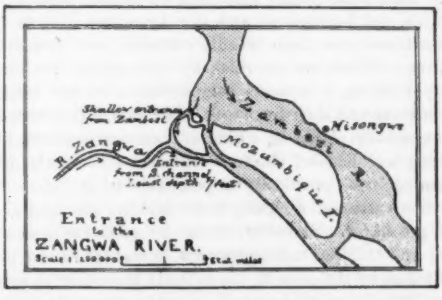
Lamas in the work of copying manuscripts, and searching for texts bearing upon my researches. Enjoying in these ways special facilities for penetrating the reserve of Tibetan ritual, and obtaining direct from Lhasa and Tashi-Chunpo most of the objects and explanatory material needed, I have elicited much information on Lāmaist theory and practice which is altogether new."

AFRICA.

Kilimanjaro.—At the meeting of the Berlin Geographical Society on March 2, 1895, Dr. Volkens gave an account of his botanical researches on Kilimanjaro. The most important section, from a geographical point of view, referred to the exploration of the districts between 7000 and 13,000 feet above sea-level, which recent accounts have described as being of wonderful grandeur, the north-western parts especially abounding in profound ravines, perpendicular cliffs, waterfalls, and all the imposing scenery of a mountain world. Hitherto maps have shown the Shira mountains as a number of chains radiating towards south and south-west, and rising to a maximum height of about 13,000 feet. Seen from the plain, they give the impression of a single range. Meyer's otherwise excellent map requires correction, inasmuch as the glacier extending down Kibo from the upper edge of the crater does not exist; its existence is, indeed, impossible, for all the middle third of the summit is a vertical precipice. The survey of the whole region has shown that the southern and eastern districts are not, as had been supposed, the most valuable. At Muika and Masaki, for example, the rock is chiefly tufa, and the soil consequently less fertile than where it is formed from decomposed lavas. Further, during the long rainy season most of the rain-bearing clouds come from west and south-west, and the supposed brooks and streamlets from the Kibo glacier do not exist. The Mawenzi is dry by the beginning of October, and nearly free of snow from autumn to spring. In Useri and the Rombo districts the Wachagga have sometimes no water-supply for weeks together, except what they obtain by squeezing banana stems, although the mere fact of extensive banana cultivation indicates ground water near the surface. The Wachagga population of Kilimanjaro may be estimated at 60,000 to 80,000, and the government is distributed amongst thirty-six chiefs. Each chief usually rules over an isolated slice of land stretching up to the mountains, and bordered on each side by ravines; but in Rombo, beyond the Lumi, the territories are more broadly extended, and form a kind of union amongst themselves. There are no villages; the natives live in conical-shaped huts, each family building a separate establishment in the banana shamba to accommodate themselves and their live stock. The huts of the chiefs are larger than the others, and are usually placed in a kind of farmyard enclosed by a stone wall. The Bomas of Sina and Kinabo, chiefs of Kibosho and Rombo Mku, are of so complicated a plan as to be practically impregnable to natives. The Wachagga are divided into five castes—the chiefs, their children, the Akides or councillors, the free men, and the slaves. Slaves are either house slaves or chiefs' slaves; the former are women and children taken prisoners in war (grown-up men are always killed), and are allotted by the chief to his subjects according to services rendered, subject to the conditions that they cannot be sold without his consent, and that he receives a commission if his consent is obtained. Chiefs' slaves are natives whose creditors have been empowered by a public meeting to sell them, or minors who have been convicted of crime, and whose relatives refuse to pay expiation money. In both cases chiefs' slaves may regain freedom when their earnings amount to the sum involved, but the position of slave offers opportunities of dealing with the master's property which make purchase of freedom rare. Only Sina of Kibosho is an absolute monarch; all the other chiefs must take counsel of

the Akides and of the Askaris, the latter bodyguard consisting of the chief's youthful companions. Succession usually goes to the eldest son, but in special cases the chief and the Akides may agree to set aside this rule. The chief and his councillors sit as a court of justice in a public shauri, and in complicated cases the trial by ordeal is resorted to. Amongst the wealthier classes this consists of the Kimangano, a draught of strongly narcotic but not poisonous effect. In the Lingana a corner of the mouth is pierced, and guilt detected by the effusion of blood; the result evidently remaining very much in the hands of the medicine-man who operates. Polygamy is not prohibited, but the price of wives is so high that monogamy is general. Divorce is obtained by returning the purchase-money: adultery is severely punished, under certain circumstances by death. Husband and wife are after death buried at the right-hand side of the entrance to their huts, where the cattle are kept; the bodies are buried naked, the man resting on his right side and the woman on her left. After a year the skulls are exhumed and placed in a clay jar embedded in the banana shamba, so that the mouth, covered with a potsherd, projects above ground. The firstborn son of the chief wife is sole heir, failing whom the property is equally divided amongst all the children.

The Zangwe River, Zambezi Basin.—Mr. W. G. Anderson, a missionary on the Lower Zambesi, has forwarded us an account of his recent examination of the mouth of the Zangwe or Zangwa river, which joins the Zambezi on the south bank, a little below the mouth of the Shire. His interest in the river was aroused by the idea that it might supply a water communication between the port of Beira and the Zambezi, and thus prove useful in the not improbable event of the silting up of the Chinde mouth of the latter river. The country between the Pungwe and the Zambezi is in parts exceedingly flat, and an interlacing of the tributary streams has for some years been shown on our maps. The first attempt to enter the Zangwe (or Zangwa in the local pronunciation, according to Mr. Anderson), made a little above the upper end of Mozambique Island, in a boat drawing 16 inches, was frustrated owing to the extreme shallowness of the water. On a return to the district, however, another channel was discovered, which on



examination proved to communicate with the Zangwe, the passage being nearly closed by high reeds, from behind which a quantity of inky-black water slowly flowed to the Zambezi. The river above was about 50 yards wide, with banks from 5 to 10 feet high, the depth averaging from 17 to 20 feet. Progress was finally stopped by an impenetrable barrier of vegetation, but beneath this the depth was found to be still 18 feet. The natives asserted that there was a deep channel the whole way to the Pungwe, and Mr. Anderson considers that the

obstruction could easily be removed. In times of flood, water is said to flow from the Zambezi into the Pungwe. The branch which forms a permanent connection, and which is named Urema on our maps, is properly, Mr. Anderson says, called Ndinge Ndinge. Dr. Livingstone's visit to the district appears still to be remembered among the natives.

Physical Features and Geology of Mauritius.—At the meeting of the Geological Society on April 3, a communication was read on the "Physical Features and Geology of Mauritius," by Major H. de Haga Haig, in which he said that the greater part of the surface of the island is composed of a volcanic breccia, with here and there lava-streams exposed in ravines, and sometimes on the surface. The commonest lavas are dolerites. In at least two places, sedimentary rocks are found at considerable elevations. In the Black River mountains, at a height of about 1200 feet, there is a clay-slate; and near Midlands, in the Grand Port group of mountains, a chloritic schist occurs about 1700 feet above the sea, forming the hill of La Selle. This schist is much contorted, but seems to have a general dip to the south or south-east. Evidence of recent elevation of the island is furnished by masses of coral-reef and beach coral rock standing at heights of 40 feet above sea-level in the south, 12 feet in the north, and 7 feet on the islands situated on the bank extending to the north-east. Major Haig gave full details of the physical geography of the island, including the nature and composition of the mountain ranges, the depth of the ravines, the occurrence of caverns in the lavas, and the character of the surrounding coral-reef; he also furnished information concerning the neighbouring islands, and referred to the possible former existence of an extensive tract of land at no great distance from Mauritius.

Dr. O. Baumann—Expedition to Zanzibar.—It is announced in the April number of *Petermann's Mitteilungen* that Dr. Baumann has been commissioned by the Leipsig Geographical Society to carry out a scientific exploration of the islands of Zanzibar, Pemba, and Mafia. Even the first named has never been fully mapped, while in the other two less still has been done in that direction, apart from the coast surveys of the British Admiralty, no travellers having spent a sufficient time on the islands to allow of an exhaustive study of their physical features.

Slatin-Pasha's Escape from Captivity.—By the fortunate escape of Slatin-Bey (now Pasha), on which we heartily congratulate him, the number of European prisoners in the hands of the Khalifa has been still further reduced. As governor of Darfur before the Mahdist rebellion, Slatin had not the same opportunities of extending the bounds of geographical knowledge as his fellow-prisoner, Lupton-Bey, former governor of the Bahr-el-Ghazal Province (who, it will be remembered, was one of the first to succumb to the hardships of captivity), but the sympathies of geographers have been none the less with him during his long twelve years' detention. The only prisoners now remaining are a member of a Catholic sisterhood, and the German Neufeld, who rashly ventured into those regions after the disturbances began.

The Likoma Islands.—The Rev. Chauncy Maples has pointed out that in the map of the British Central Africa Protectorate, lithographed at Stanford's geographical establishment for the March number, the Likoma Islands are wrongly coloured; they should be marked as British, in accordance with Article IV. of the Agreement of June, 1893, and of Article V. of the Treaty of June 11, 1891.

POLAR REGIONS.

A Peary Relief Expedition.—The first number of the *Bulletin* of the American Geographical Society for the current year contains a series of documents

relating to the proposed expedition to bring back Mr. Peary in August next. At the suggestion of Mrs. Peary, the President of the American Geographical Society wrote to the Secretary of the Navy at Washington, setting forth that Mr. Peary had made three important expeditions in northern Greenland at his own expense, spending about £12,000, thereby adding many new facts to our knowledge; and suggesting that a Government vessel should be sent to Melville Bay in August to ensure the return of himself and his two faithful companions. The Secretary of the Navy replied that it was impossible to take any action without special authority from Congress, and an appropriation to cover expenses. Mrs. Peary, aided by Mr. Emil Diebitsch, 2014, Twelfth Street, N.W., Washington, as business manager, has in consequence resolved to raise £2400—of which the American Geographical Society contributes £200—to equip a private expedition to start from Newfoundland about July 5. A limited number of scientific societies, educational institutions, or individuals contributing £200 to the funds will be entitled to nominate a representative on the expedition, subject to the approval of the scientific leader. Such representative must provide his own scientific outfit and pay his own expenses to St. John's, where he would embark. During the three months of the absence of the expedition opportunity for scientific work would be given in different parts of northern Greenland.

Arctic Ballooning.—M. S. A. Andrée communicated his project of a north polar expedition to the meeting of the Paris Academy of Sciences on April 29. He looks on the essentials of a balloon expedition as being the provision of a balloon sufficiently powerful to carry three persons with instruments, provisions for four months and ballast, the whole weighing about three tons, the balloon to be sufficiently impermeable in its texture to remain thirty days in the air, to be provided with arrangements for refilling in the polar regions, and to be to some extent capable of being guided. All these conditions, the author states, have been fulfilled in balloons which have been made and tested. The method of steering he favours is by means of a sail fitted with guide-ropes which drag along the ground, and prevent the balloon from being driven along at the full speed of the wind. The difference of velocity between the wind and the retarded balloon is utilized in steering, and on trial the plan succeeded in turning the balloon 27° from the wind, and in favourable cases even 40°. The object of the proposed expedition, which will start in the summer of 1896, is to make the most complete geographical exploration possible of the north polar area. The balloon will be filled on one of the islands at the north-west of Spitzbergen, and weighted so as to float about 900 feet above the ground. The continual daylight will permit of photographs of the whole route being taken. M. Andrée shows that many of the obstacles to arctic exploration by sea or over the ice offer no hindrance to a well-equipped balloon, and he draws attention to the fact that in a few days of favourable weather more may be done in the way of polar discovery than has been effected by previous centuries of effort.

Dr. Drygalski's Photographs of Greenland.—The extensive collection of photographs brought home by Dr. Drygalski have been exhibited at the Berlin Geographical Society, and some explanatory remarks are given in a recent number of the *Verhandlungen* (1895, No. 2). They include scenes illustrative of the life and occupations of the Greenlanders, types of scenery and vegetation, and in particular, pictures of glaciers and ice, which, as Dr. Drygalski says, really give the Polar Region its character, and the study of which helps also to the correct understanding of the land features. The division of the ice-formations of Greenland into two distinct types may be well discerned from an examination of the views. The *coast glaciers* resemble those of Europe, especially those of Norway, having their area of supply above the snow-line, but the course through the valleys being entirely

below it. They carry down a great quantity of earthy matter, from the disintegration of the valley walls. The inland ice is of a totally different character, having no connection with the present surface features, but behaving like a viscid mass which has overflowed from a point in the interior. The photographs show the succession of stages from the uniform almost motionless expanse in the interior, through the region where the motion increases and the first cracks begin to appear, to the sudden drop to sea-level, and the sea-front whence the icebergs detach themselves. The increase in the rate of motion as the coast is approached forms one of the most important points of contrast with the coast glaciers. This important collection (which illustrates also minute points of ice-structure) should be most useful for the elucidation of ice-conditions in the Arctic Regions.

GENERAL.

Geography in Education.—At the Edinburgh Summer Meeting for educational lectures, to be held from August 5 to 31, we observe that geography receives ample recognition. Under the general head of the "Evolution of Cities," M. Elisée Reclus will deliver four lectures on "Belgium and its Inhabitants," Professor Geddes five lectures on "Britain," and Mr. A. J. Herbertson, the lecturer on geography at Owens College, Manchester, will give six lectures on "Edinburgh and its Province"—a course on regional geography which should stimulate the hearers, many of whom will be teachers, to obtain a firmer grasp of the principles of geography.

Medals of the Paris Geographical Society.—The award of medals for the year 1895 was announced at the meeting on March 1 as follows. The two gold medals of the Society are given to Lieut. Mizon and M. Emile Gautier for their explorations in West Africa and Madagascar respectively, while those founded by private individuals go to the following, the scene or subject of the work for which they are given being added in brackets: M. Foureau (Sahara), M. E. Ponel (French Congo), M. Th. Moureaux (magnetic map of France), Père Colin (Madagascar), M. A. Courtry (map of the Congo), M. Vidal de la Blache (general atlas), and M. Thoroddsen (Iceland).

Geographical Pictures.—Under the title of *Round the World*, Messrs. George Newnes have published a set of reproductions of photographs from all parts of the world at a remarkably low price. These pictures are in many cases thoroughly characteristic, and, being clearly printed, they should prove useful in the geography classes of elementary schools. The bird's-eye views of many towns are interesting in showing the nature of the site, and very often in suggesting the reason for the position of the town itself.

OBITUARY.

Professor J. D. Dana.

By Professor W. Morris Davis.

This eminent American geologist, an honorary corresponding member of the Society, of long standing, died on April 14. James Dwight Dana was born in Utica, New York, on February 12, 1813. He studied at Yale College, graduating in 1833, and taking a position as instructor in mathematics in the United States navy. From 1836 to 1838 he was assistant in chemistry at Yale under Silliman, and during this period he published his system of mineralogy. In 1838

he was appointed mineralogist, geologist, and zoologist to the United States exploring expedition under Captain Wilkes, and spent five years in the Antarctic and Pacific oceans. Soon after reaching Sydney, Australia, in 1839, Dana saw a brief newspaper notice of Darwin's then newly published theory with respect to the origin of atolls and barrier reefs. "The paragraph threw a flood of light over the subject, and called forth feelings of peculiar satisfaction and of gratefulness to Mr. Darwin, which still come up afresh," Dana wrote in 1872, "whenever the subject of coral islands is mentioned. The Gambier islands in the Paumotus, which gave Darwin the key to the theory, I had not seen; but on reaching the Feejees, six months later, in 1840, I found there similar facts on a still grander scale; . . . so that I was afterwards enabled to speak of his theory as established with much more positiveness than he himself, in his philosophic caution, had been ready to adopt." The control of the distribution of reef-building corals by the temperature of the sea-water in the coldest month was one of Dana's contributions to this subject; thus explaining the absence of corals from the Galapagos. The fiorded coasts of both South and North America led Dana to the view, then seldom if at all expressed, that fiords result from erosion followed by submergence; whether the erosion was done "by running water alone, or more or less by glaciers," must be determined by special examination.

On the return of the expedition in 1842, Dana was occupied for several years at New Haven and Washington in preparing his reports on zoöphytes, geology, and crustacea. In 1855 he succeeded Silliman, whose daughter he had married, receiving the professorship of natural history and geology at Yale; the title being afterwards changed to geology and mineralogy. Resigning the professorship in 1892, he devoted his time to the preparation of the fourth edition of his famous 'Manual of Geology,' which, from its first edition in 1863, has always held a first place among American text-books on this subject. The first edition of his 'Manual of Mineralogy' was issued in 1848, and its fourth edition in 1886; a later edition being prepared by his son, Edward S. Dana, Professor of Physics at Yale.

Although Dana seldom occupied himself with purely geographical questions, his writings and teaching were much concerned with the geographical distribution of geological formations, and with the origin of continents and of mountain ranges. He was the first to bring forward, in 1847, the doctrine of the comparative permanence of continents, which has found much confirmation in later years.

The wide recognition of Dana's scientific eminence is shown by his election to honorary membership in many foreign societies, while his beautiful personal character brought to him the affectionate veneration of all the geologists of his country. His death occurred suddenly on April 14, 1895.

Dr. P. J. Veth.

By Professor Dr. C. M. Kan.

The death has lately been announced of Professor P. J. Veth, the well-known Dutch geographer, who had since 1878 been one of the honorary corresponding members of the Royal Geographical Society.

Circumstances of life contributed to make of Professor Veth one of the most eminent and all-round savants of the Netherlands, while his own energy, accuracy, and critical faculty did the rest. Born at Dordrecht on December 2, 1814, Pieter Johannes Veth spent the first thirty years of his life in laying the foundation of the most diverse branches of knowledge, and in the second period he devoted his mental powers in particular to the study and interests of the Indian Archipelago.

In the last part of his life he extended the field of his geographical and ethnographical studies to other parts of the world. During the years of preparation, he attended the gymnasium of Dordrecht, where the learned principal, Dr. J. W. Grimm, introduced him to the classical and modern authors (including Shakespeare). At the University of Leiden he studied literature and theology, the Hebrew and Arabic languages (1832–38). Appointed Reader at the Royal Military Academy of Breda in 1838, it fell to him to teach English and Malayan, with the geography and ethnology of the Indian Archipelago. As Professor at the Athenæum of Franeker (1841) and that of Amsterdam (1843), he gave lectures on Oriental languages and philosophy.

So prepared, he applied the powers of his mind and the fruits of his wide and profound studies to the promotion and popularization of the knowledge of the Archipelago, not only on its scientific, but also on its social and economic side. As editor of the *Gids* (1843–1864), one of the best and most widely read periodicals in the Netherlands, and also of the *Tijdschrift voor Nederlandsch Indië* (Journal of the Dutch Indies), as director of the 'Bybel genootschap' (Bible society), and co-editor of the *Aardrijkskundig en Statistisch Woordenboek van Nederlandsch Indië* (Geographical and Statistical Gazetteer of the Dutch Indies, 1865–1869), he dealt with and solved many problems relating to the cultures, monetary and educational questions, philology, religion, history, geography, ethnology, and ethnography of the Malay Archipelago. During this period he wrote his 'Borneo's Wester-Afdeeling' (geographical, statistical, and historical description of the western part of Borneo), preceded by a description of the entire island (1854–1856), and published his monograph on the island of Timor (*Gids*, 1855). After his election as professor (1864) at the government school for the education of officers at Leiden, and at the University of that city (1877), he published a most important series of articles and works, of which we can mention here only his translation of Wallace's 'Malay Archipelago' ('Insulinde: het land van den Orang-oetang en den paradijs vogel,' Amsterdam, 1869–1871), a translation in which the original was enriched with many notes and corrections of high value; his 'Java, geographisch, ethnologisch, historisch' (Haarlem, 1873–1884), his *magnum opus* and the standard work on that important island, a *monumentum aere perennius* to its author, which gained the gold medal at the exhibition at the Paris Geographical Congress of 1875. In the third period (1873–1895) Professor Veth was chosen president by the founders of the Dutch Geographical Society (1873), and as that office obliged him to extend the field of his studies, and to take note of the scientific and practical aspects of geography which are of special importance to a nation with colonial and commercial interests, so in his turn he laid the Dutch society and geographical science in general under obligations to himself, by devoting all his powers, learning, and energy to a furtherance of the aims and projects of the Society, and the study of geography in those directions. Assigning to geography an intermediate place between science and practical affairs, he encouraged voyages and expeditions, especially to the colonies, taking care to point out their interest for commerce and industry, and publishing the results of Dutch research in every quarter of the world.

Naturally, the greater number and the best of his writings during this period are found in the *Journal* of the Dutch Geographical Society.* We can mention only

* An excellent bibliography of all the publications of Professor Veth relative to general geography, ethnology, history, religion, the geography of the Indian Archipelago, art, literature, languages, politics, etc., is to be found in the Album (Feestbundel) presented to Professor Veth by his friends and pupils on his eightieth birthday, compiled with great care by A. P. M. van Oordh and F. de Stoppeluur (Leiden: E. J. Brill, 1894).

the articles on the Javanese antiquities of the Dieng plateau; on Atjeh, Deli, and the east coast of Sumatra; his notes on the Key group, Timor, Flores, and South Celebes; and last, but not least, the publication of the reports by members of the expedition to the unknown interior of Sumatra ("Midden Sumatra. Reizen en Onderzoekingen der Sumatra expeditië," cf. R.G.S. *Proceedings*, i. p. 759). In the field of general geography, he published in the same *Journal* of the Dutch Geographical Society his studies on the progress of geography and geographical explorations, Dutch travellers in Africa (P. N. Muller and D. D. Veth), the South African Republic, Bibliography of Dutch works on Africa, Letters of P. J. van der Kellen on his journeys in Ambella, the life and voyages of Van de Putte in Asia, etc., etc. When Professor Veth celebrated his eightieth birthday (December 2, 1894), friends and pupils among his countrymen, and a great number of eminent savants from foreign countries, testified in a presentation Album their respect, gratitude, and affection for the venerable old man. Soon after they had to deplore his death, but consoled themselves with the thought that no long life could have been better used and ended. Until three or four days before his death he was engaged in studies connected with the second edition of his 'Java.' Death came peacefully, and took him to his well-earned rest.

Dr. David Lyall.

By Sir Joseph D. Hooker, K.C.S.I., C.B., F.R.S.

Dr. David Lyall, R.N., F.L.S., Deputy Inspector of Hospitals and Fleets, one of the two last surviving officers of the Antarctic Expedition under Sir James Ross, died at Cheltenham in March last, in his seventy-eighth year. He was born at Auchinbrae, in Kincardineshire, and received his medical education at Aberdeen. After a short voyage to the Arctic seas in a Greenland whale-ship, he entered the Royal Navy, and was immediately appointed Assistant-Surgeon of H.M.S. *Terror*, Commander Crozier, the consort of the *Erebus*. To this duty Captain Ross added that of making botanical collections, in which Dr. Lyall distinguished himself, contributing largely to the botanical results of the expedition.

After some years of service in the Mediterranean Dr. Lyall received his promotion, and, on the recommendation of Sir W. Hooker, was appointed Surgeon and Naturalist to H.M.S. *Acheron*, commissioned to survey the coasts of New Zealand. On this voyage Dr. Lyall made admirable collections, especially in the harbours of the west coast of the southern islands, which had not been visited by any naturalist except Archibald Menzies during Vancouver's voyage in the beginning of the century. In 1852, Dr. Lyall was appointed Surgeon and Naturalist to the *Assistance*, one of the squadron sent out under the command of Sir E. Belcher in search of Sir John Franklin. In this service he received an acting order as lieutenant in command of a sledge-party employed in the search, and subsequently as Surgeon-Superintendent of the *North Star*, when the crews of the *Investigator*, *Resolute*, and *Intrepid*, and the invalids of the *Assistance* and *Pioneer*, retreated to that ship.

On his return he was appointed to the *Pembroke*, Captain Seymour, and served in her throughout the Baltic campaign of 1855, and was present at the bombardment of Sweaborg. This was followed by a short period of service on the Home Station, and this again by his being appointed Surgeon and Naturalist to H.M. surveying ship *Plumper*, and afterwards to the *Hecate*, under Captain (now Sir George) Richards, employed in the delimitation of the sea boundary between Great Britain and the United States. From the *Hecate* he was transferred to the

Land Boundary Commission under Col. Sir J. Hawkins, R.E. On this service Dr. Lyall formed a magnificent herbarium, of which an account was given to the Linnæan Society, accompanied with a sketch of the regions of vegetation crossed between the sea and summit of the Rocky Mountains in British Columbia.

Dr. Lyall's long and arduous services concluded with the appointments of Surgeon to Pembroke Dockyard, and subsequently to H.M.SS. *Trincomalee* and *Dædalus*, on the Home Station. He retired in 1873, and latterly resided at Cheltenham, where, shortly before his death, he met with an accident, the breaking of an arm, from the effects of which he never wholly recovered. He married, in 1866, Miss F. A. Rowe, of Haverfordwest, by whom he had three children.

MEETINGS OF THE ROYAL GEOGRAPHICAL SOCIETY, SESSION 1894–1895.

Eleventh Ordinary Meeting, May 13, 1895.—CLEMENTS R. MARKHAM, ESQ., C.B., F.R.S., President, in the Chair.

ELECTIONS.—*Edward Alfred Broome; Robt. Bonham Box Christie; Captain J. E. Clanson, R.E.; Alfred Deed; A. C. English; Robt. Montgomery Horne-Payne; Hon. H. G. Lyulph Howard; Alexander Weston Jarvis; Henry Richard Ladell, M.A.; J. T. Last; Eduardo Lembcke; John Martineau; Wm. E. Pickells; Major Clifford Probyn, M.C.C.; Major-General Lord William Seymour; Colonel Chas. Strahan, R.E. (Surveyor-General of India); Victor Streich; Julius Wernher.*

The Papers read were:—

1. "A Journey on the Upper Euphrates." By V. W. Yorke.
2. "Journeys in the Peninsula of Halicarnassus." By J. L. Myres.

GEOGRAPHICAL LITERATURE OF THE MONTH.

Additions to the Library.

By HUGH ROBERT MILL, D.Sc., *Librarian*, R.G.S.

THE following abbreviations of nouns and the adjectives derived from them are employed to indicate the source of articles from other publications. Geographical names are in each case written in full:—

A. = Academy, Académie, Akademie.
Ann. = Annals, Annales, Annalen.
B. = Bulletin, Bollettino, Boletim.
Com. = Commerce, Commercial.
C. R. = Comptes Rendus.
Erdk. = Erdkunde.
G. = Geography, Geographie, Geografia.
Ges. = Gesellschaft.
I. = Institute, Institution.
J. = Journal.
M. = Mitteilungen.
Mag. = Magazine.
P. = Proceedings.
R. = Royal.
Rev. = Review, Revue, Revista.
S. = Society, Société, Selskab.
Sitzb. = Sitzungsbericht.
T. = Transactions.
V. = Verein.
Verh. = Verhandlungen.
W. = Wissenschaft, and compounds.
Z. = Zeitschrift.

On account of the ambiguity of the words *octavo*, *quarto*, etc., the size of books in the list below is denoted by the length and breadth of the cover in inches to the nearest half-inch. The size of the *Journal* is 10 × 6½.

EUROPE.

Denmark. Löffler.

Dänemark, Eine landeskundliche Skizze von Dr. E. Löffler. Separat-Abdruck aus der "Zeitschrift für Schul-Geographie," XVI. Jahrg., V. u. VI. Heft, 1895. Size 9 × 6, pp. 20. *Presented by the Author.*

Denmark and Iceland. **Murray.**

A Handbook for Travellers in Denmark, with Schleswig and Holstein, and Iceland. Sixth Edition. London: John Murray, 1893. Size 7 × 4½, pp. x. [22] and 154. *Maps and Plans. Price 7s. 6d. Presented by the Publisher.*

Eastern Europe. **Bigelow.**

The Borderland of Czar and Kaiser. Notes from both sides of the Russian Frontier. By Poultney Bigelow. New York: Harper & Bros., 1895. Size 7½ × 5, pp. vi. and 344. *Illustrations. Presented by the Author.*

A pleasantly written and handsomely illustrated little book narrating incidents of travel in a Russophobist spirit.

England—Isle of Wight. **Ward.**

Thorough Guide Series. The Isle of Wight, with Notes for Geologists & Cyclists. By C. S. Ward. Eight Maps and Plans, by Bartholomew. London: Dulau & Co., 1895. Size 6½ × 4½, pp. x. and 86. *Price 2s. 6d. Presented by the Publishers.*

This guide is furnished with special geological information, and, although not contoured, the one-inch map of the island, which is included in sections, is very clear, and has been revised specially for the use of cyclists, the steep hills on the roads being noted.

England—Lake District. **Baddeley.**

Thorough Guide Series. The English Lake District. By M. J. B. Baddeley. With 15 Maps . . . by Bartholomew. Seventh Edition. London: Dulau & Co., 1895. Size 6½ × 4½, pp xxxii. and 254. *Price 5s. Presented by the Publishers.*

Well brought up to date.

France—Côte-d'Or. *Mém. A. Dijon* (4) **4** (1893–94): 255–275. **Collot.**

La formation du relief dans le département de la Côte-d'Or. Par M. L. Collot.

France—Seine-Inférieure. *B.S. Normande G.* **16** (1894): 85–109, 149–168. **Fallex.**

Le departement de la Seine-Inférieure. Par M. Fallex. *With Maps and Diagram.*

Holland. *Tijd. Nederlandsch Aard. Genoots.* (2) **12** (1895): 51–70. **Winkel.**

De Taalkaart voor Noord-Nederland door J. te Winkel.

On a language-map of the Northern Netherlands.

Irish Channel—Tides. *Ann. Hydrographie* **22** (1894): 395–403. **Börgen.**

Die Gezeiten-Erscheinungen im Irischen Kanal. Bearbeitet von Admiralitätsrath Prof. Dr. Börgen. Aus dem im Druck befindlichen "Segelhandbuch der Südküste Islands und des Bristol-Kanals."

Russia—Harbours. *Ann. Hydrographie* **22** (1894): 319–334. ——

Beschreibung russischer Handelshäfen.

Descriptions of the harbours and trade of St. Petersburg, Reval, Pernau, Riga, Vindau, Libau, Odessa, Nikolayef, Yalta, Berdyansk, Mariupol, Taganrog, Novorossisk, Poti, Batum, and Archangel.

Russian Coast. *Ann. Hydrographie* **22** (1894): 283–295. **Spindler.**

Eisverhältnisse an den Seeküsten des russischen Reiches in den Jahren 1888 bis 1893. Nach J. Spindler.

Wales. **Baddeley and Ward.**

Thorough Guide Series, North Wales. Parts I. and II. (In one volume.) By M. J. B. Baddeley and C. S. Ward. (Part I.) Fifth Edition. (Part II.) Fourth Edition. London: Dulau & Co., 1895. Size 6½ × 4½, pp. (Part I.) xxiv. and 238; (Part II.) xvi. and 154. *Maps, Plans, and Panoramas. Price* (in one vol.) *5s. Presented by the Publishers.*

A revised and enlarged edition of this admirable guide. The maps are clear, but lack the pictorial effect of those in the "Scotland" and "English Lakes" of the same series.

ASIA.

Arabia. *Globus* **67** (1895): 165–170, 188–194, 207–211, 222–226, 234–237. **Nolde.**

Reise nach Innerarabien 1893. Von Baron Eduard Nolde. *With Portrait.*

This account of a journey from Damascus to Jof, and thence through the Nefud to Haiyannieh, is accompanied by a portrait of the author, whose tragic death in London occurred during its publication.

Central Asia. *Petermann's M.* **41** (1895): 87–92. **Hedin.**

Der kleine Kara-kul und Bassik-kul. Von Dr. Sven Hedin. *With Map.*

Chitral. *J.S. Arts* **43** (1895): 487–497. **Younghusband.**

Chitral and the States of the Hindu Kush. By Captain F. E. Younghusband. *With Map.*

Eastern Asia. **Schlegel and Cordier.**

T'oung pao. Archives pour servir à l'Étude de l'Histoire, des Langues, de la Géographie et de l'Ethnographie de l'Asie Orientale (Chine, Japon, Corée, Indo-Chine, Asie Centrale et Malaisie). Rédigées par MM. Gustave Schlegel et Henri Cordier. Extrait. Leyden: E. J. Brill, 1895. Size 10 × 6½, pp. 8.

Indo-China. **Lanessan.**

La Colonisation Française en Indo-Chine. Par J.-L. de Lanessan. Paris: F. Alcan, 1895. Size 7½ × 5, pp. viii. and 360. *Map.*

A sketch of the history of the French power in Indo-China, with special reference to the history of the French colonies since 1891.

Malay Peninsula. ———

The Kedah-Senggora or Malay Trans-Peninsular Railway. A concession granted by His Majesty the King of Siam to Charles Dunlop of Messrs. Powell & Co., Singapore. Size 9 × 6, pp. 24. *Presented by Messrs. Powell & Co.*

The railway here described is being constructed from Senggora on the Gulf of Siam to Alor Sta on the strait of Malacca, a distance of 76 miles, and thence south to Kulin, 60 miles farther.

Siberia. *J.S. Arts* **43** (1895): 499–507 **Wiggins.**

My recent voyages in Siberia. By Capt. Wiggins.

AFRICA.

Africa. **Vincent.**

Actual Africa; or, the Coming Continent. A tour of exploration. By Frank Vincent. New York: D. Appleton & Co., 1895. Size 9½ × 6½, pp. xxiv. and 542. *Map and Illustrations. Price* 24*s. Presented by the Author.*

Mr. Vincent has been a very extensive traveller, and is able to compare every country he visits with many others. The descriptions are obviously faithful. Mr. Vincent's views on geographical questions may be guessed at from the statement on the first page that the general configuration of Africa is not unlike that of South America, and on the last page, that, after travelling 355,000 miles in 25 years, he concluded the "Ten leading countries of the world, in the order of their novelty, variety, and degree of interest," to be Egypt, India, Japan, Turkestan, Persia, Morocco, Brazil, Mexico, Italy, and the United States.

Africa. **Keltie.**

The Partition of Africa. By J. Scott Keltie. With Twenty-four Maps. Second Edition. London: E. Stanford, 1895. Size 8½ × 6, pp. xvi. and 564. *Price* 16*s. Presented by the Publisher.*

The second edition of this work is seventy pages larger than the first, and, in addition to this enlargement, there has been a thorough revision of text and maps, carrying the history of the changeful continent on to the present year. The bibliography has been extended, and a statistical table of the partition of Africa in January, 1895, has been compiled by Mr. Ravenstein.

Africa—Disease-Distribution. **Felkin.**

On the Geographical Distribution of Tropical Diseases in Africa, with an Appendix on a new method of illustrating the geographical distribution of disease. By R. W. Felkin, M.D. *With Table and Map.* Edinburgh, W. F. Clay, 1895. Size 9 × 6, pp. 80. *Price* 3*s.* 6*d. Presented by the Publisher.*

Dr. Felkin is recognized as an authority on tropical diseases, and his long experience in tropical Africa fits him especially for a discussion such as this on the distribution of specific diseases in that continent, and the relation of ill-health to climate.

Africa—Political Division. **Hertslet.**

The Map of Africa by Treaty. Vol. I. Abyssinia to Great Britain (Colonies). Nos. 1 to 102. *With numerous Maps.* Vol. II. Great Britain and France to Zanzibar. Nos. 103 to 208. *With Appendix and Index.* By Sir Edward Hertslet, K.C.B. London: Eyre & Spottiswoode, 1894. Size 10½ × 6½, pp. xliv. and 1100. *Price* 36*s.* 6*d.*

The object of this work is, in the words of the author, "to enable all those who are interested in the development of Africa to examine for themselves the title-deeds by which each foreign power maintains its right to the Possessions which it holds, or to Territory which it occupies, or claims influence over, in that part of the world." It is enough to say that the work is similar to Sir Edward Hertslet's well-known volumes on 'The Map of Europe by Treaty,' that it contains numerous maps showing the boundaries and their changes, and that it is provided with full indexes.

Africa—Pygmy Peoples. **Lenz.**

Ueber die sogenannten Zwergvölker Afrikas. Vortrag, gehalten den 7 März, 1894. Von Oskar Lenz. ('Vorträge des Vereines zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien, XXXIV Jahrgang. Heft 15.') Wien, 1894. Size 7½ × 4½, pp. 38.

A popular paper on the diminutive races of Africa.

Cameroons—Geology. **Knockenhauer.**

M. Forschungs. Deutschen Schutzgebieten **8** (1895): 87–105.

Geologische Untersuchungen im Kamerungebiete. Von Bergassessor B. Knockenhauer. *Diagrams.*

A sketch of the geological structure of the Cameroons district.

Cameroons—Yaúnde. **Zenker.**

M. Forschungs. Deutschen Schutzgebieten **8** (1895): 36–70.

Yaúnde. Von G. Zenker. *Illustrations.*

A full description of the Yaúnde tribe in the interior of the Cameroons, with notes on their habits and customs, social relations, beliefs, etc.

Central Africa. **Vierkandt.**

Die Volksdichte im westlichen Central-Afrika. Habilitationsschrift verfasst von Dr. A. Vierkandt. Leipzig: Duncker & Humblot, 1895. Size 10 × 6½, pp. 110. *Maps. Presented by the Author.*

This will receive special notice.

Central Africa. *Verh. Ges. Erdk. Berlin* **22** (1895): 103–119. **Götzen.**

Herr A. Graf von Götzen, Ueber seine Reise quer durch Central-Afrika. *With Map.*

Central Africa—Victoria Nyanza. **Fischer.**

Petermann's M. **41** (1895): 1–6, 42–46, 66–72.

Am Ostufer des Victoria-Njansa. Aus dem Reisetagebuch. Von Dr. G. A. Fischer. *With Map.*

East Africa. *Oesterreichische Monats. Orient* **21** (1895): 1–4. **Baumann.**

Oesterreichisch-ungarische Interessen in Ostafrika. Von Dr. Oscar Baumann.

East Africa—Zambesi. *Scottish G. Mag.* **11** (1895): 114–130. **Keane.**

An East African Waterway. By Commander Henry J. Keane.

On the navigation of the Zambesi.

Egypt—Agriculture. **Floyer.**

Note sur l'emploi d'une argile comme fertilisant dans la Haute-Egypte. Par E. A. Floyer. Le Caire: Imp. Nationale, 1894. Size 9½ × 6½, pp. 8. *Presented by the Author.*

Egypt—The Nile. *Nature* **51** (1895): 444–448. **Scott-Moncrieff.**

The Nile. A lecture delivered at the Royal Institution, on January 25, by Sir Colin Scott-Moncrieff.

French Sudan. **Monteil.**

De Saint-Louis à Tripoli par le Lac Tchad. Voyage au travers du Soudan et du Sahara accompli pendant les années, 1890-91-92. Par le Lieut. Colonel P.-L. Monteil. Préface de M. le V^te^ Melchior de Vogüé. Paris: F. Alcan [1894]. Size 13 × 8½, pp. x. and 464. *Portrait, Map, and Illustrations. Presented by the Author.*

This splendid record of Colonel Monteil's great journey will receive a special review.

French West Africa. **Maistre.**

C. Maistre. A travers l'Afrique Centrale, du Congo au Niger, 1892-1893. Préface de M. le Prince d'Arenberg. Paris: Hachette & Co., 1895. Size 11 × 7½, pp. x. and 308. *Maps and Illustrations. Price* 20*s.*

M. Maistre's great journey from the basin of the Congo to that of the Chad has frequently been referred to in these pages. It is only necessary to say that the volume now published does it justice in a well-illustrated form.

French West Africa—Niger. **Péroz.**

Commandant Péroz. Au Niger. Récits de Campagnes, 1891-1892. Paris: Calmann Lévy, 1894. Size 9 × 5½, pp. 426. *Map. Price* 7*s.* 6*d.*

A soldier's account of the French operations on the Upper Niger, containing much information regarding geography and the inhabitants of the country.

German East Africa—Kilimanjaro. **Volkens.**

Verh. Ges. Erdk. Berlin **22** (1895): 152-173.

Herr Prof. Dr. G. Volkens: Exkursionen am Kilima-Ndjaro.

German South-West Africa. *Verh. Ges. Erdk. Berlin* **22** (1895): 174-187. **Uechtritz.**

Herr B. E. von Uechtritz: Reisen in Südwest-Afrika.

An account of journeys in South-West Africa in 1891-93.

Gold Coast Colony. **Bell.**

Outlines of the Geography of the Gold Coast Colony and Protectorate. Compiled for use in the Colonial Schools, by Hesketh Bell. London: Sampson Low & Co., 1894. Size 7½ × 5, pp. iv. and 70. *Maps. Presented by the Publishers.*

This little schoolbook is of value, apart from its educational usefulness, for the description it contains of the commercial products of the Gold Coast.

Madagascar. *B.S. Normande G.* **16** (1894): 242-272, 310-347. **Gravier.**

Les Français à Madagascar. Par M. Gabriel Gravier. *With facsimile Maps.*

Morocco. *Rev. G.* **36** (1895): 171-178. **Milhaud.**

Le Climat du Maghreb el Aksa. Contribution à l'étude de la géographie physique du Maroc. Par Albert Milhaud.

A compilation from the works of various authors, to which reference is made.

North Africa. **Keane.**

Stanford's Compendium of Geography and Travel (New Issue), Africa. Vol. i., North Africa. By A. H. Keane. London: E. Stanford, 1895. Size 8 × 5½, pp. xvi. and 640. *Maps and Illustrations. Price* 15*s. Presented by the Publisher.*

Africa will occupy two volumes of the new issue in place of the one previously devoted to it; and the work is entirely new, a fact that is not prominently indicated by the title. Mr. Keane has given a careful and systematic discussion of northern Africa, including the Atlas region, Tripolitana, the Sahara, the Black Zone or Sudan, Inhabitants and states of the Sudan, Italian North-East Africa, Egypt, and Nubia.

Portuguese East Africa—Beira. *Scottish G. Mag.* **11** (1895): 180-185. **Ross.**

Beira. By A. Carnegie Ross, H.B.M. Consul at Beira.

South Africa. **Leclercq.**

A travers l'Afrique Australe. Par Jules Leclercq. Paris: E. Plon, Nourrit & Co., 1895. Size 7½ × 4½, pp. 312. *Maps and Illustrations. Presented by the Author.*

M. Leclercq describes, in his well-known graphic manner, his impressions of a recent visit to the South African colonies, republics, and protectorates.

NORTH AMERICA.

Canada. **Parkin.**

The Great Dominion. Studies of Canada. By George R. Parkin. London: Macmillan and Co., 1895. Size 8 × 5½, pp. viii. and 252. *Maps.* *Presented by the Publishers.*

These studies "touch upon the most significant conditions of Canadian life, the most important of the problems which confront Canadians, and those external relations which have the greatest general interest." They were made on the spot during an extended tour in Canada, and verified on a subsequent visit, and they are already favourably known on account of their first publication in the *Times*. The subjects dealt with are the North-West, the Canadian Pacific Railway, Coal, Eastern Canada, British Columbia, Northern Canada, Trade relations and trade-policy, Labour, Education and Political tendencies. An index concludes the work, and there are three maps of the chief railway-systems.

Canada—British Columbia. *Alpine J.* 17 (1895): 289–296. **Green.**

Climbing in the Selkirks and adjacent Rocky Mountains. By Wm. Spotswood Green. *With Two Illustrations.*

Canada—Tides and Currents. **Dawson.**

Report of W. Bell Dawson, C.E. Survey of Tides and Currents in Canadian Waters. [Ottawa, 1894.] Size 10 × 6½, pp. 14. *Presented.*

Mexico—Yucatan. *Globus* 67 (1895): 197–201. **Sapper.**

Die unabhängigen Indianerstaaten von Yucatan. Von Dr. Karl Sapper. Coban. *With Map.*

North America. **Guest.**

A Round Trip in North America. By Lady Theodora Guest. With Illustrations from the Author's Sketches. London: Edward Stanford, 1895. Size 9 × 6, pp. 270. *Price* 10*s.* 6*d.* *Presented by the Publisher.*

A pleasing record of a pleasant holiday in the United States and Canada, including a tour in California.

Pacific Coast—Mountains. **Kerr and Chapman.**

Table of Elevations within the Pacific Slope. Compiled for the Sierra Club, by Mark B. Kerr and R. H. Chapman. (Publications of the Sierra Club, Number 8.) San Francisco, 1895. Size 10 × 6½, pp. 32.

The tables give the height in feet, the approximate position and authority of each important summit in California, Nevada, Oregon, Washington, Alaska, British Columbia, and Lower California, the list being alphabetical under each state.

United States. **Roosevelt.**

The Winning of the West. By Theodore Roosevelt. Vol. i. From the Alleghanies to the Mississippi, 1769–1776; vol. ii. Ditto, 1777–1783: vol. iii. The Founding of the Trans-Alleghany Commonwealths, 1784–1790. New York: G. P. Putnam's Sons, 1889–94. Size 9½ × 6½, pp. (vol. i.) xvi. and 352; (vol. ii.) 428; (vol. iii.) vi. and 340. *Maps.*

The first volume traces the expansion of the colonies from the Alleghanies toward the Mississippi between 1769 and 1776; volume ii. continues the story of this advance by the United States to 1783; and volume iii. treats of the founding of trans-Alleghany commonwealths from 1784 to 1790.

United States—California. **Lawson.**

The Geomorphogeny of the Coast of Northern California. By Andrew C. Lawson. (University of California, Bulletin of the Department of Geology, vol. i. No. 8, pp. 241–272.) Size 10½ × 7½. *Presented by the Author.*

United States—California. *Sierra Club B.* 1 (1895): 168–186. **McClure.**

Explorations among the Cañons north of the Tuolumne River. By N. F. McClure. *With Sketch-Maps.*

United States—Genesee River. **Grabau.**

P. Boston S. Natural History 26 (1894): 359–369.

The Preglacial Channel of the Genesee River. By Amadeus W. Grabau. *With Figures.*

United States—Lake Michigan. **Brower.**

No. 108—Part II. U.S. Hydrographic Office. Sailing Directions for Lake Michigan, Green Bay, and Straits of Mackinac. Washington:

Government Printing Office, 1894. Size 9½ × 6, pp. vi. and 140. *Charts. Presented by the U.S. Hydrographic Office.*

The charts show the prevailing currents of the lakes, and plans of the chief canals and harbours.

United States—Minnesota. **Brower.**

The Mississippi River and its Source. A Narrative and Critical History of the Discovery of the River and its Head-waters, accompanied by the Results of Detailed Hydrographic and Topographic Surveys. By Hon. J. V. Brower. With an Appendix by Alfred J. Hill. Minneapolis, Minn.: Harrison and Smith, 1893. Size 9½ × 6½, pp. xv. and 360. *Portraits, Maps, and Illustrations. Presented by the Author.*

This important work will form the subject of a special review.

United States—New England. **Woodworth.**

P. Boston S. Natural History **26** (1894): 197–220.

Some Typical Eskers of Southern New England. By J. B. Woodworth. *With Figures.*

United States—Pennsylvania. *America J. S.* (3) **49** (1895): 174–185. **Williams.**

Notes on the Southern Ice Limit in Eastern Pennsylvania. By Edward H. Williams. *With Diagram.*

A record of progress in tracing out the boundary of glaciation in North America.

United States—South Carolina. **Whitney.**

John Hopkins University Studies in Historical and Political Science. Thirteenth Series, I.–II. Government of the Colony of South Carolina. By Edson L. Whitney. Baltimore: The Johns Hopkins Press, 1895. Size 9½ × 6, pp. 122.

United States—Wages. **Levasseur.**

Institut de France. Le Salaire aux États-Unis. Par M. E. Levasseur. Lu dans la séance publique annuelle des cinq Académies du 25 Octobre 1894. Paris: Firmin-Didot & Co., 1894. Size 11½ × 9, pp. 20. *Presented by the Author.*

CENTRAL AMERICA AND WEST INDIES.

Amazon Valley Tribes. *J. Anthropological I.* **24** (1895): 236–284. **Markham.**

A List of the Tribes in the Valley of the Amazon, including those on the Banks of the Main Stream and of all its Tributaries. Attempted by Clements R. Markham, C.B., etc. (Second Edition.)
Also a separate copy, presented by the Author.

This list contains the names, habitats, and concise descriptions of no less than 905 different tribal branches belonging to more than 600 separate tribes, together with a catalogue of 70 authorities, with their dates. It is a revision and extension of an earlier list published by Mr. Markham thirty-one years ago.

American Languages. **Mitre.**

Lenguas Americanas. Estudio bibliográfico-lingüistico de las obras del P. Luis de Valdivia sobre el Araucano y el Allentiak, con un vocabulario razonado del Allentiak. Por Bartolomé Mitre. La Plata, 1894. Size 6½ × 5, pp. 154. *Presented by the Author.*

NEW MAPS.

By J. Coles, *Map Curator*, R.G.S.

EUROPE.

Baltic Sea. **Krümmel.**

1. Skizze der neueren physikalischen Expeditionen in der Ostsee. 2. Temperatur-Profil durch die Ostsee zwischen der Darsser Schwelle und den Finnischen Scheren, Juli 1877. 3. Temperatur-Profil durch den Finnischen Golf (1 Juli 1889). 4. Profil durch einen Theil der westlichen Ostsee, Februar 1894. Temperaturen. 5. Salzgehalt (Promille). 6. Profil durch einen Theil der westlichen Ostsee, Mai 1894. Temperaturen.

7. Salzgehalt (Promille). Entworfen u. gezeichnet von Prof. O. Krümmel. Petermann's 'Geographische Mitteilungen,' Jahrgang 1895. Tafel 5. Justus Perthes, Gotha. *Presented by the Publisher.*

Belgium. **l'Institut Cartographique Militaire.**

Carte des Chemins de Fer, Routes & Voies Navigables de la Belgique, dressée à l'échelle du 1 : 320,000 or 5·1 stat. miles to an inch. Publiée par l'Institut Cartographique Militaire, Bruxelles, 1895. Avec la division du territoire en Arrondissements Administratifs.

England and Wales. **Ordnance Survey.**

Publications issued since April 8, 1895.

1-inch—General Maps :—

ENGLAND AND WALES:—81 and 82 (on one), 153, 163, 167, engraved in outline; 237, hills engraved in black or brown; 126, 127, 143, 157, 171, 188, 241, hills photozincographed in brown, 1*s.* each. (Revision) 315, hills engraved in black or brown, 1*s.*

6-inch—County Maps :—

ENGLAND AND WALES:—**Lancashire,** 48 N.E., S.E., 49 N.W., S.W., S.E., 51 N.W., S.W., 52 N.E., S.W., 53 N.E., S.W., 54 N.W., N.E., 55 N.W., S.W., 57 N.W., 60 N.W., 61 S.E., 62 S.E., 70 N.E., 73 S.W., 97 N.E., S.W., S.E., 105 N.W., 111 S.E., 112 N.E., 115 S.W., 1*s.* each. **Yorkshire,** 88 S.W., 105 N.E., 138 N.W., 155 N.E., 157 N.W., 172 N.W., N.E., 200 N.E., S.W., 203 S.W., 279 N.W., 1*s.* each.

25-inch—Parish Maps :—

ENGLAND AND WALES:—**Devonshire** (Revised), CXXIII. 3, 7, 8, 16; CXXX. 4. **Cornwall,** LV. 2, 3*s.* each. **Lancashire,** CXII. 13, 14*s.* (coloured). **Yorkshire,** VI. 11, 5*s.*; 14, 14*s.*; XV. 4, 14*s.* (coloured).

Town Plans—5-feet scale :—

London—Re-survey, VI. 89, 98; VIII. 32, 42, 65, 77, 78; X. 15, 33, 34, 2*s.* 6*d.* each.

Stockport (Revised), VI., IX., XII., 2*s.* 6*d.* each.

(*E. Stanford, Agent.*)

Germany. **Königl. Preuss Landes-Aufnahme.**

Karte des Deutschen Reiches. Scale 1 : 100,000 or 1·5 stat. mile to an inch. Sheets: 142, Wilhelmshaven; 219, Pyritz; 373, Gubran; 412, Sömmerda; 659, Konstanz. Herausgegeben von der Kartogr. Abtheilung der Kgl. Preuss. Landes-Aufnahme, 1894. *Price* 1·50 *marks each sheet.*

Scandinavia. **Roth.**

Norden af Dr. Magnus Roth. Scale 1 : 1,000,000 or 15·8 stat. miles to an inch. P. A. Norstedt & Söners Förlag. Ny öfversededd upplaga. 1895. 8 sheets.

ASIA.

Central Asia. **Wyld and Bacon.**

Wyld's Military Staff Map of Central Asia and Afghanistan. Scale 1 : 2,000,000 or 31·5 stat. miles to an inch. London: G. W. Bacon & Co. 4 sheets. *Presented by the Publishers.*

Central Asia. **Sven Hedin.**

Topographische Skizze des Kleinen-Kara-Kul und des Bassik-Kul. Aufgenommen und gezeichnet von Dr. Sven Hedin. Juli 1894. Scale 1 : 50,000 or 1·2 inch to a stat. mile. Petermann's 'Geographische Mitteilungen,' Jahrgang 1895. Tafel 6. Gotha: Justus Perthes. *Presented by the Publisher.*

Chitral. **Surveyor-General of India.**

A war-map showing the scene of operations of the Chitral Relief Force. Scale 1 : 1,520,640 or 24 miles to an inch. Taken from the map of Afghanistan, 1889, with corrections to date. Published under the direction of Colonel C. Strahan, R.E., Surveyor-General of India, April, 1895. Calcutta: Thacker, Spink & Co. *Price (uncoloured)* 1 *rupee.*

This map has been produced at the Survey of India Office, Calcutta, to show the

scene of the recent operations of the Chitral Relief Force. It is clearly printed, has been corrected to date, and is well suited to the purpose for which it has been published.

Chitral. **Johnston.**

Map to illustrate the Chitral expedition in North-West India. Scale 1 : 3,225,000 or 50·9 stat. miles to an inch. W. & A. K. Johnston, Edinburgh and London. *Price* 6*d.* (*coloured*). *Presented by the Publishers.*

This is one of the numerous maps which have lately been published to illustrate the country traversed by the Chitral Relief Expedition. It also shows the north-west portion of India, and, as all means of communication are laid down, it will be useful for general reference with regard to that part of the Indian Empire.

North-West Frontier of India. **Bartholomew.**

Bartholomew's Special Map of the North-Western Frontier of India. Scale 1 : 3,300,000 or 52 stat. miles to an inch. With inset of Chitral and adjacent country. Scale 1 : 1,400,000 or 22 stat. miles to an inch. J. Bartholomew & Co., Edinburgh, 1895. *Price* 1*s.* *Presented by the Publishers.*

This is a general map of North-West India and the neighbouring States, with an inset on an enlarged scale of Chitral. In the principal map no hill-shading is given, and in the inset the mountains are so faintly indicated that it conveys but a poor idea of the rugged nature of the country.

North-West Frontier of India. **Stanford.**

Stanford's Sketch-Map of the North-West Frontier of India from Peshawar to the Pamirs. Scale 1 : 633,600 or 10 stat. miles to an inch. London : Published by Edward Stanford. *Price* 5*s.*

The hill-shading in this map is very pronounced, and clearly shows the difficulties which the Chitral Relief Expedition has had to overcome. All the latest material has been used by the compiler, and the scale on which it is drawn is sufficiently large for general purposes of reference. Boundaries have been carefully laid down, and all the trigonometrical stations, as well as ascertained heights, are shown.

AFRICA.

Africa—Madagascar. **Service Géographique de l'Armée.**

Carte de l'Afrique. Scale 1 : 2,000,000 or 31·5 stat. miles to an inch. Publié par le Service Géographique de l'Armée, Paris, 1894. Sheets Nos. 47, Antsirana; 52, Antananarivo. *Price* 1 *fr. each.*

German East Africa. **Kiepert.**

Karte von Deutsch-Ostafrika. 29 Blatt und 8–10 Ansatzstücken im Maassstabe von 1 : 300,000 (or 4·8 stat. miles to an inch). Konstruirt und gezeichnet unter Leitung von Dr. Richard Kiepert. Im Auftrage und mit Unterstützung der Kolonial-Abtheilung des Auswärtigen Amts, herausgegeben durch die Verlagshandlung Dietrich Reimer (Hoefer und Vohsen), Berlin. Sheets: B. 4, C. 3, C. 4.

When completed, this map will consist of 29 sheets and 8 or 10 insets, prepared under the direction of Dr. R. Kiepert, at the request and with the assistance of the Colonial Department of the German Foreign Office. The three sheets issued are—Sheet B. 4, which embraces the country around Lake Eyassi; Sheet C. 4, showing the country south of Lake Eyassi; and Sheet C. 3, which contains the country in the neighbourhood of Tabora. In their construction, all the latest material has been used, and the routes of all well-known travellers have been laid down. The manner in which these sheets have been produced leaves nothing to be desired.

West Africa. **Stanford.**

Stanford's Map of the British Possessions in West Africa, 1895. Scale 1 : 5,900,000 or 93·1 stat. miles to an inch. London : E. Stanford, 1895. *Price* 3*s.*

GENERAL.

The World. **The "Times."**

The Times Atlas. Complete in fifteen weekly parts. Published at the *Times* Office, London. Parts 1 to 5. *Price* 1*s.* each part. *Presented by the Publishers.*

This atlas is a new and revised edition of the "Universal Atlas," which latter is an English edition of Andree's well-known Handatlas. It is to be completed in fifteen weekly parts, containing 173 maps, and an index. The maps, in the parts already issued, are produced in a very clear style, and have been carefully revised. When completed it will be an exceedingly useful atlas for general reference, and probably the cheapest of its class that has ever been published in this country.

CHARTS.

Admiralty Charts. **Hydrographic Department, Admiralty.**

Charts and Plans published by the Hydrographic Department, Admiralty, January and February, 1895. *Presented by the Hydrographic Department, Admiralty.*

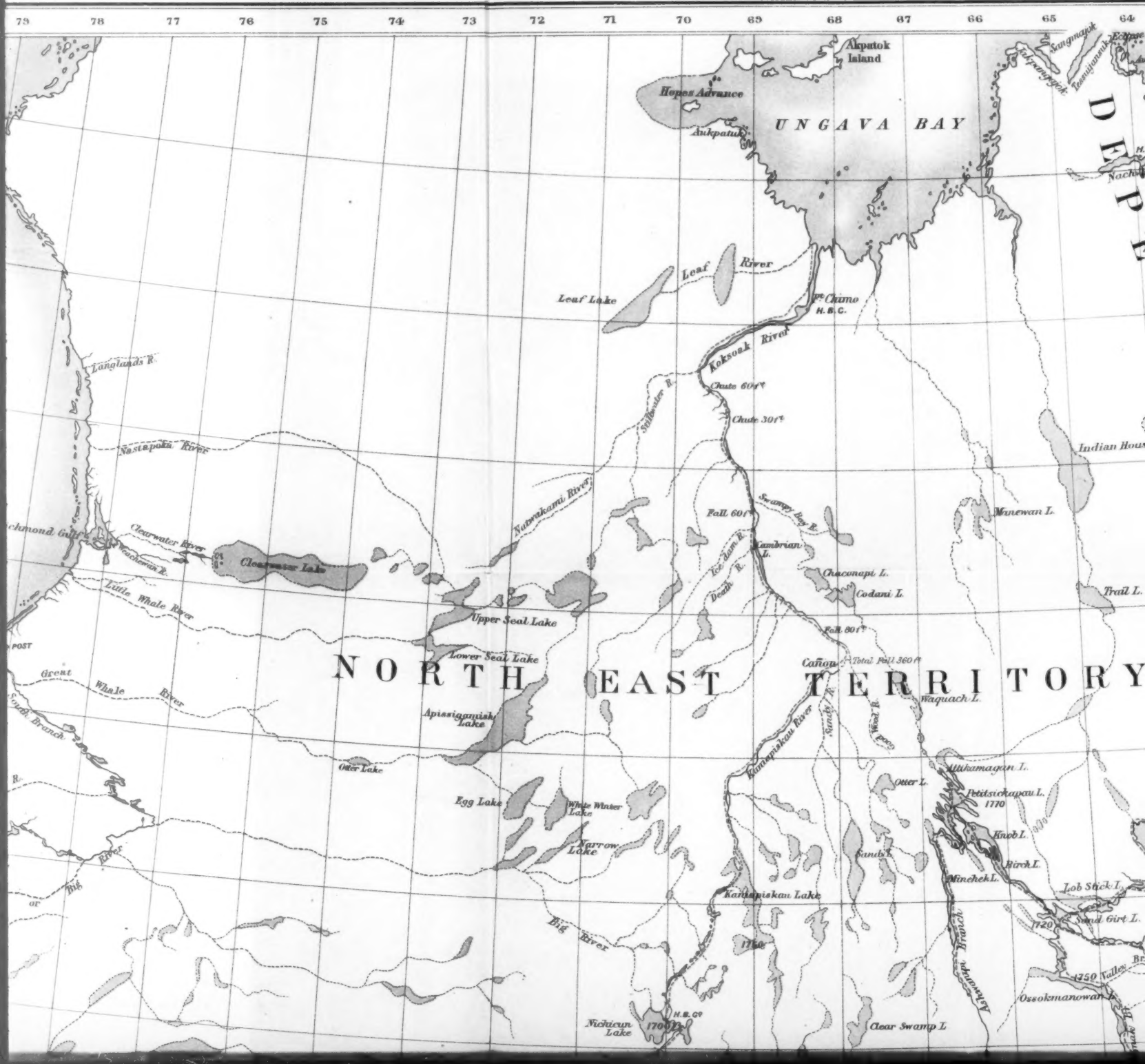
No.	Inches.	
344	m = 10·8	Spain, east coast:—Port of Tarragona. 2*s.* 6*d.*
2394	m = 4·32	Balearic islands:—Cabrera and adjacent islands. 2*s.* 6*d.*
2157	m = 2·4	Sardinia, north coast:—Maddalena and adjacent islands, 2*s.* 6*d.*
2336	m = 2·9	Newfoundland:—Garia and Le Moine bays. 1*s.* 6*d.*
330	m = 0·59	North America:—Lake and river St. Clair, with the Detroit river. 2*s.* 6*d.*
2262	m = 0·29	Brazil:—River Tariri to Contas, including the approaches to Bahia. 2*s.* 6*d.*
1296	m = *various.*	Plans on the Coast of Chile:—Piti Palena inlet, Vallenar road, port of St. Domingo, San Andrea bay, Inner port, Otway, Low, and Melinka ports. 2*s.*
1302	m = *various.*	Plan on the coast of Chile:—Totoralillo bay, port of Huasco, Herradura de Carrizal, Pajonal cove, Port Copiapó, Ports Caldera and Calderilla, Port Flamenco, Chañeral de las Animas bay, Pan de Azúcar anchorage, Lavata bay, Arica road. 1*s.* 6*d.*
2284	m = *various.*	Plans of anchorages on the west coast of Sumatra:—Krung Raba, Sidoh, Riau and Lehong, Lambesoi, Sinabang, Tapak, Siaba, Tabekat, Silugui, and Katorei bays, Channel between Great and Little Simalu islands, Telok Dalam, Telok Luagundi, Tello roadstead, Naku anchorage. 1*s.* 6*d.*
2415	m = 2·9	Japan:—Nagasaki harbour. 2*s.*
2174	m = 0·45	Japan:—Amarube zaki to Ando zaki. 2*s.* 6*d.*
953	m = 0·45	Japan:—Omai saki to Tsurugi saki, including Suruga gulf and Sagami Ura. 2*s.* 6*d.*
2355	m = 2·0 m = 4·0	Anchorages in the Solomon islands:—Viru harbour, Rendova harbour. 1*s.* 6*d.*
2383	m = 1·0	Solomon islands:—Márovo lagoon. 1*s.*
2226	m = 0·97	New Hebrides:—Epi and adjacent islands. 2*s.* 6*d.*
500	m = 4·45 m = 5·84	Anchorages in Malekula island:—Ure or Tomman island anchorage, Port Ravallec. 1*s.* 6*d.*
2315		Sōrō to North cape:—New plan: Hammerfest havn.
199		Brindisi to Ortona:—New plans: Barletta, Molfetta.
1663		Anchorages on the west coast of Newfoundland:—Plan added: Hollihau's wharf.
584		Sydney inlet to Nitinat, including Clayoquot and Barclay sounds:—Plan added: Stamp harbour.
800		Kerguelen island, plans of harbours:—Plan added: Gazelle basin.
855		Anchorages on the west coast of Sumatra:—Plans added: Tabujong road, Mansalar bay.
934		Surabaya, Bali, and Sapudi straits:—New plan: Buleleng road.

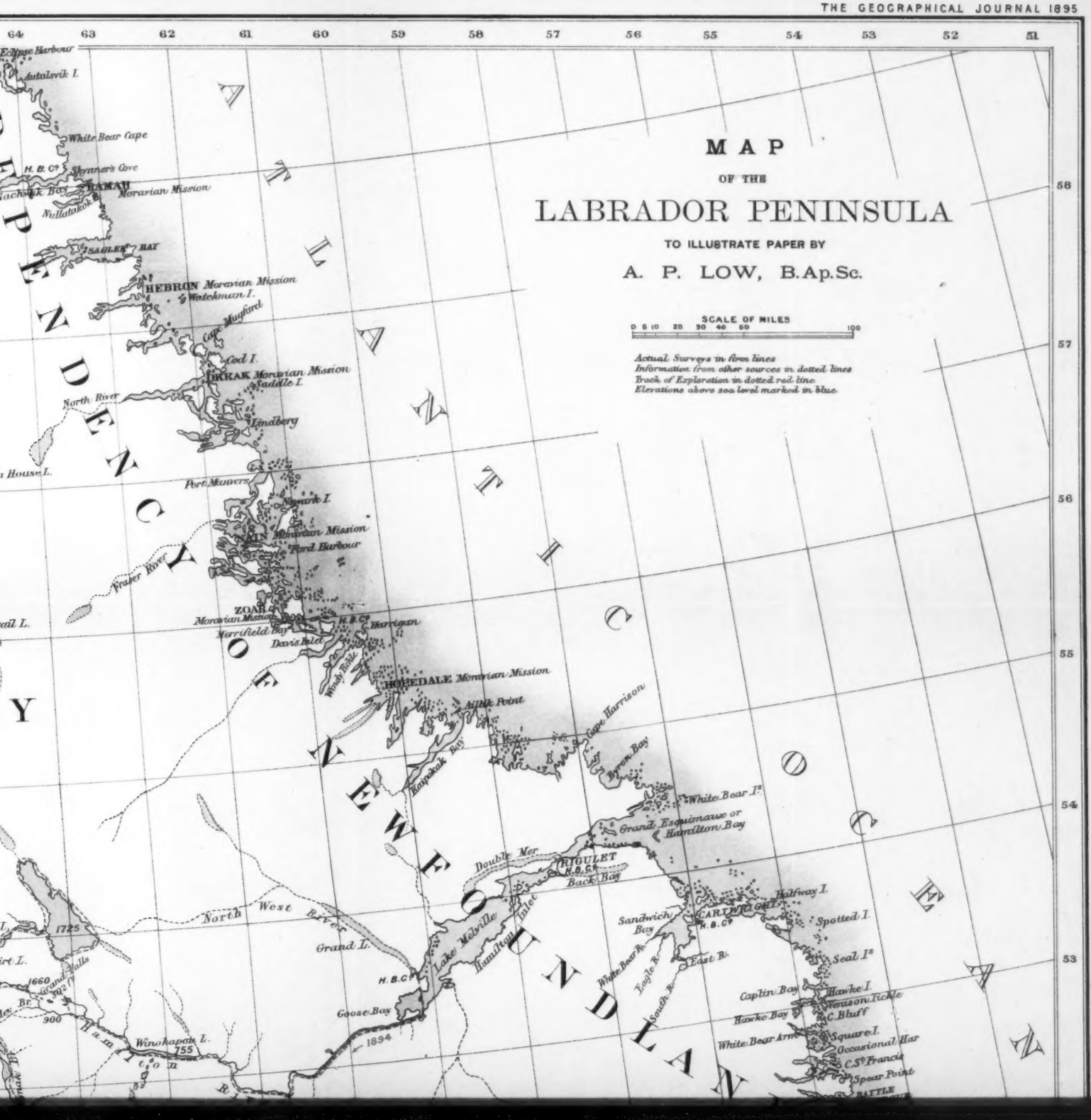
(*J. D. Potter, Agent.*)

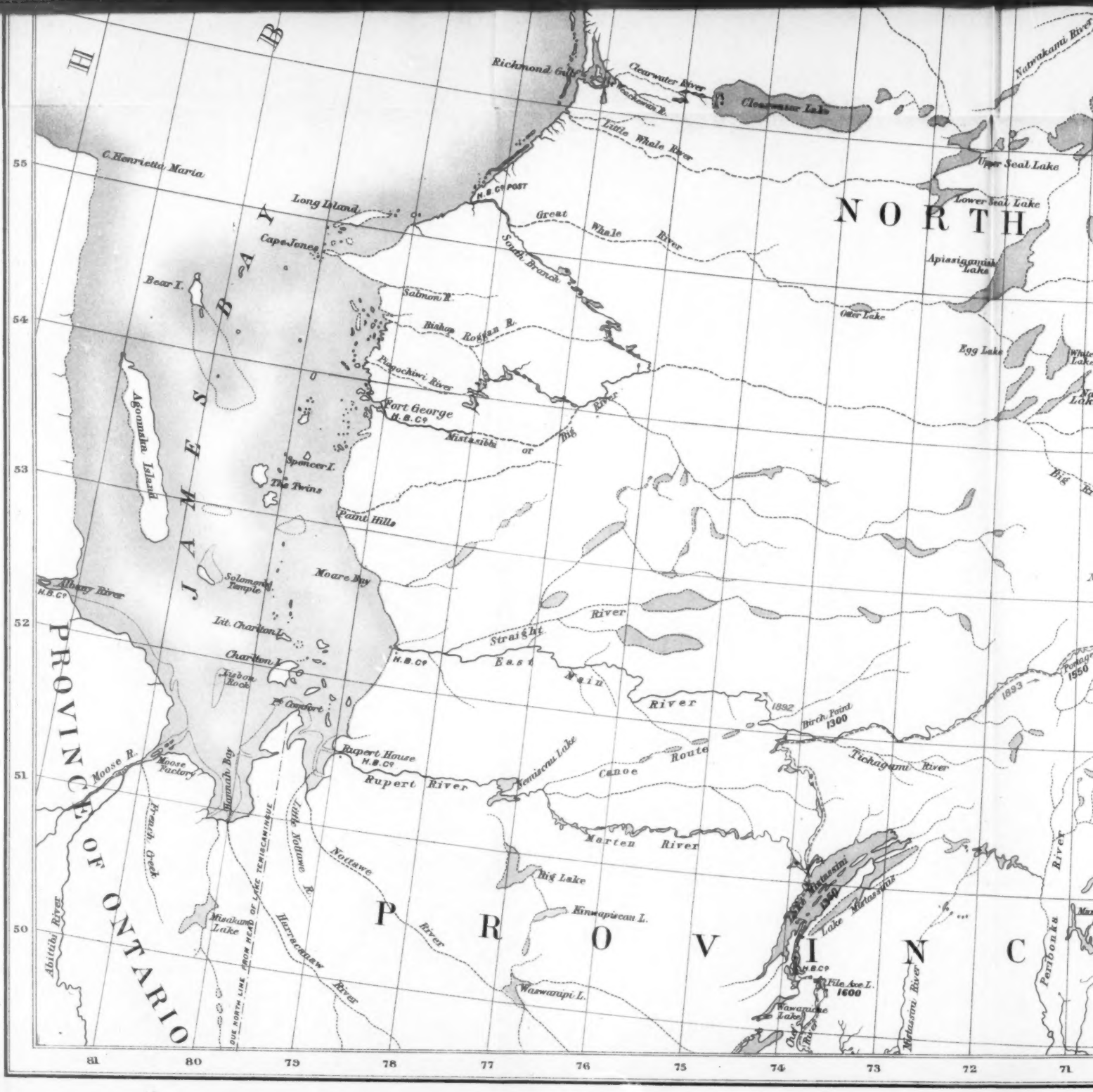
N.B.—It would greatly add to the value of the collection of Photographs which has been established in the Map Room, if all the Fellows of the Society who have taken photographs during their travels, would forward copies of them to the Map Curator, by whom they will be acknowledged. Should the donor have purchased the photographs, it will be useful for reference if the name of the photographer and his address are given.

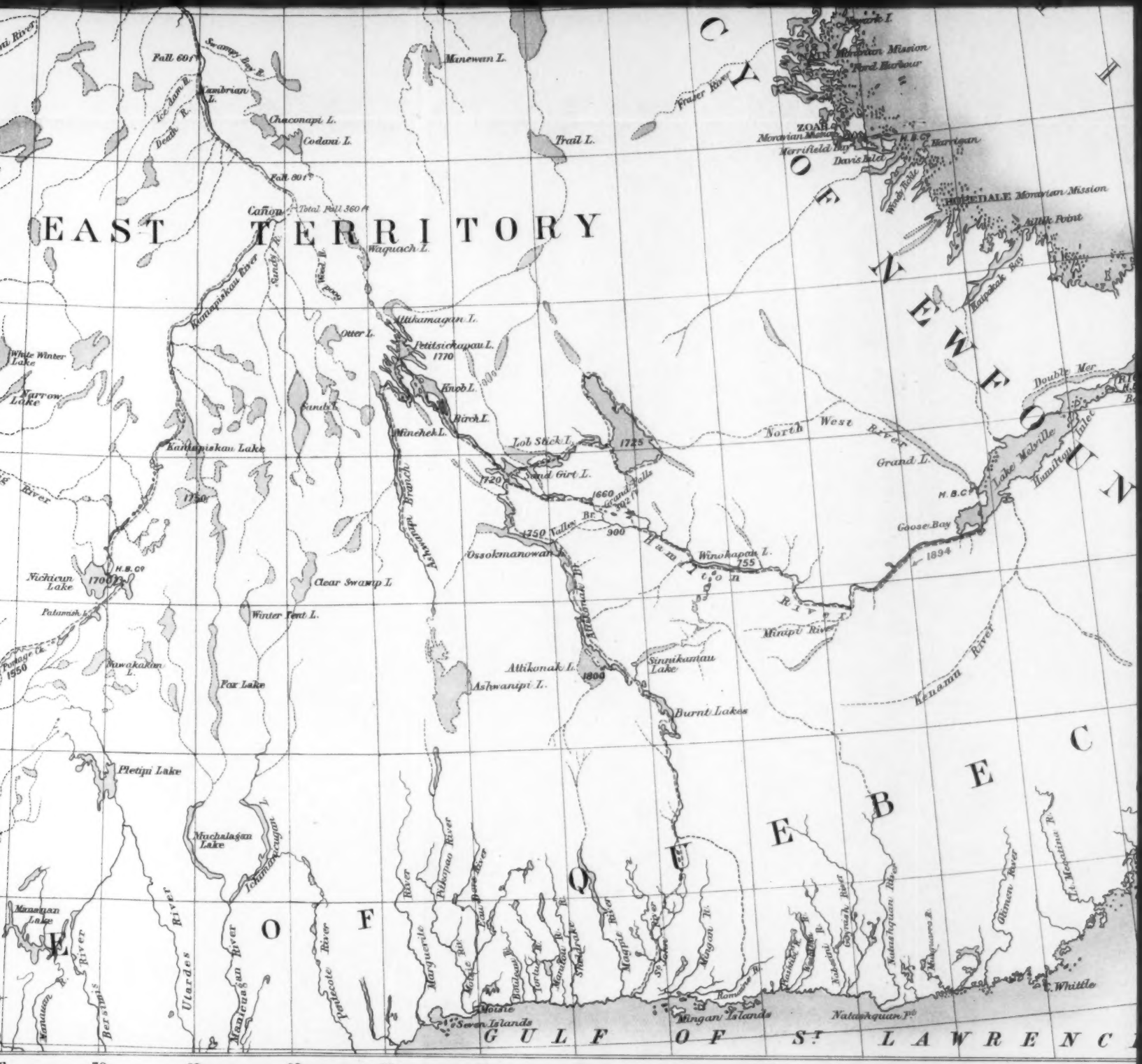
85
84
83
82
81
80
79
78
77
76
75
74
58
57
56
55
54
53
HUDSON BAY
HUDSON STRAITS
C. Dufferin
Langlands R.
Nastapoka River
Richmond Gulf
Clearwater River
Clearwater Lake
Little Whale River
C. Henrietta Maria
H.B.Co POST
Long Island
Great Whale River
Cape Jones
South Branch
Bear I.
Salmon R.
Otter Lake
Bishop Roffan R.
Pigeochiori River
Agoomaka Island
Fort George
H.B.Co
Mistassibi
or
Big
River
Spencer I.
The Twins
Paint Hills
Moore Bay
Salamonie
Temple
NOR

73
72
71
70
69
68
67
66
65
64
63
62
61
UNGAVA BAY
DEPENDENCY
Akpatok Island
Hopes Advance
Aukpatuk
Eclipse Harbour
Autalsvik I.
White Bear Cape
H. B. Co's
Nachvak Bay
RAMAH
Moravian Mission
Nullatakok
SAGLEK BAY
HEBRON Moravian Mission
Watchman I.
Cape Mugford
God I.
North River
Indian House L.
Port Manvers
Leaf River
Leaf Lake
Fort Chimo
H. B. C.
Koksoak River
Chute 60ft
Chute 30ft
Stillwater R.
Natvakami River
Fall 60ft
Swampy Bay R.
Cambrian L.
Ice Jam R.
Death R.
Chaconapi L.
Codani L.
Minewan L.
Fraser River
Trail L.
ZOAR
Moravian Mission
Merrifield
Upper Seal Lake
Lower Seal Lake
Fall 80ft
Cañon
Total Fall 360ft
RTH EAST TERRITORY
Wapiach L.
Apissiagamish Lake
Kanaspiskau River
Sandy R.
West R. Forks
Otter L.
Attikamagan L.
Petitsickapau L.
1770
Egg Lake
White Winter Lake
Narrow Lake
Knob L.
Birch L.
Minchek L.
Sandy R.
Kanlapiskau Lake
Lob Stick L.
1725
North
Big River
1750
1720
Sand Girt L.
1660
Grand Falls
302
1750 Valley
Br.
300
Ashuanipi Branch
Ossokmanowan L.
Winokapau L.
755
Nichicun Lake
1700
H. B. Co
Clear Swamp L.
Winter Trail L.
Fatamish L.
Naskaupi River

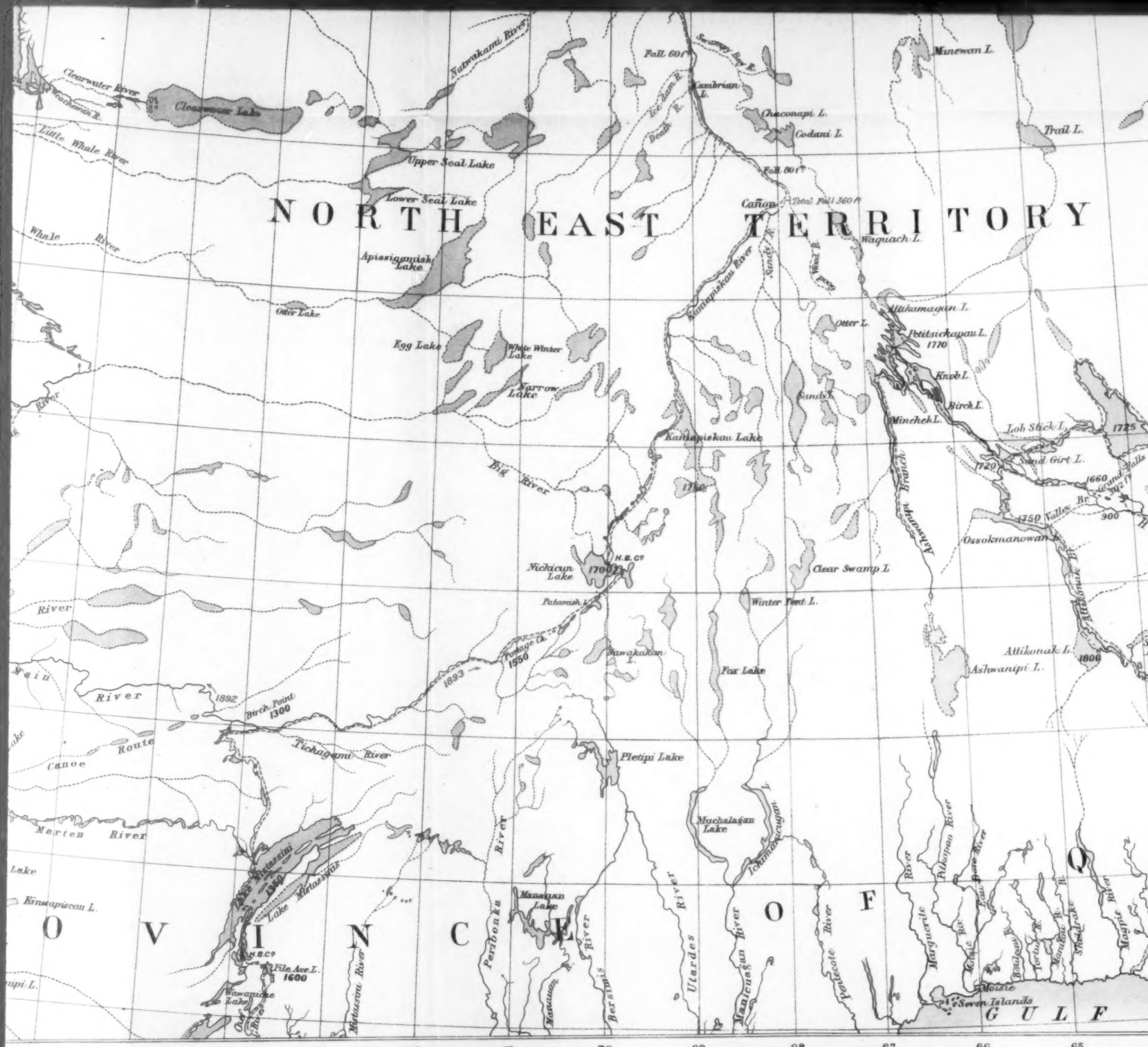

79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
Akpatok Island
Hopes Advance
UNGAVA BAY
Aukpatuk
Sangmagak
Tessitianuit
Nachvak
Leaf River
Leaf Lake
Ft. Chimo H.B.C.
Koksoak River
Chute 60ft
Chute 30ft
Spallander R.
Langlands B.
Nastapoka River
Natwakami River
Indian House
Manewan L.
Swampy Bay R.
Fall 60ft
Cambrian L.
Ice Jam R.
Death R.
Chaconapi L.
Codani L.
Trail L.
Fall 80ft
Canon
Total Fall 360ft
Richmond Gulf
Clearwater River
Kaschewan R.
Clearwater Lake
Little Whale River
Upper Seal Lake
Lower Seal Lake
POST
Great Whale River
NORTH EAST TERRITORY
Waquach L.
Apissiganish Lake
South Branch
Otter Lake
Kanaapiskau River
Sandy R.
Otter L.
Ithamagan L.
Petitsickapau L.
1770
Knob L.
Egg Lake
White Water Lake
Narrow Lake
Sandy L.
Birch L.
Minchek L.
Lob Stick L.
Kanaapiskau Lake
Big River
1750
Sand Girt L.
1720
Ashuanipi Branch
1750 Valley
Ossokmanowan L.
H.B.Co
Nichicun Lake
1700
Clear Swamp L.


MAP
OF THE
LABRADOR PENINSULA
TO ILLUSTRATE PAPER BY
A. P. LOW, B.Ap.Sc.
SCALE OF MILES
0 5 10 20 30 40 50 100
Actual Surveys in firm lines
Information from other sources in dotted lines
Track of Exploration in dotted red line.
Elevations above sea level marked in blue
64 63 62 61 60 59 58 57 56 55 54 53 52 51
58 57 56 55 54 53
Eclipse Harbour
Antalovik I.
White Bear Cape
H. B. Co's Skinner's Cove
RAMAH Moravian Mission
Nullatalook
SAGLEK BAY
HEBRON Moravian Mission
Watchman I.
Cape Mugford
Cod I.
OKKAK Moravian Mission
Saddle I.
North River
Lindberg
Port Manvers
Nepark I.
NAIN Moravian Mission
Fond Harbour
Fraser River
ZOAR Moravian Mission
H. B. Co
Harrigan
Merrifield Bay
Davis Inlet
HOPEDALE Moravian Mission
Windy Ridge
Aillik Point
Hamilton Inlet
Cape Harrison
Byron Bay
White Bear Is
Grand Esquimaux or Hamilton Bay
Double Mer
RIGOLET H.B.C.
Back Bay
Halfway I.
Sandwich Bay
CARTWRIGHT H.B.C.
Spotted I.
Seal Is
North West River
Grand L.
Lake Melville
Hamilton Inlet
White Bear R.
Eagle R.
East R.
South R.
Caplin Bay
Hawke I.
Venus on Tickle
Hawke Bay
C. Bluff
White Bear Arm
Square I.
Occasional Har
C. St Francis
Spear Point
BATTLE
H.B.C.
Goose Bay
Winokapau L.
1725
1660
1894
755
900
Br.
Labrador Peninsula
Newfoundland

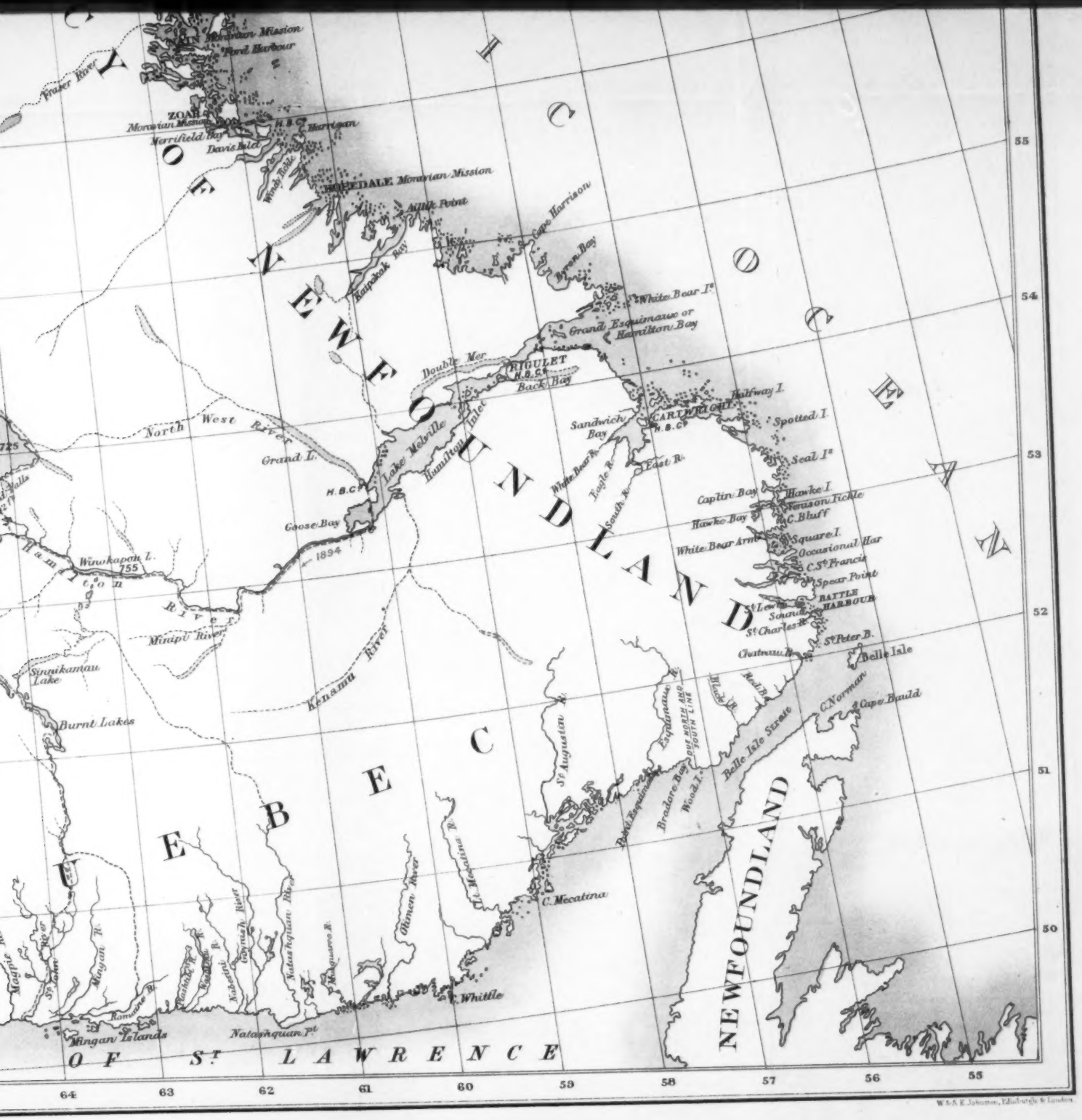

H B
J A M E S B A Y
PROVINCE OF ONTARIO
P R O V I N C
NORTH
Richmond Gulf
Clearwater River
Clearwater Lake
Natwakana River
Little Whale River
Upper Seal Lake
Lower Seal Lake
C. Henrietta Maria
Long Island
H.B.Co POST
Great Whale River
South Branch
Cape Jones
Apissigamish Lake
Bear I.
Salmon R.
Otter Lake
Bishop Roffan R.
Egg Lake
Pagwachuan River
Fort George H.B.Co
Mistassibi or Big River
Agoomska Island
Spencer I.
The Twins
Paint Hills
Albany River H.B.Co
Solomon's Temple
Moore Bay
Lit. Charlton I.
Charlton I.
Straight
River
East Main River
H.B.Co
Eyrbus Rock
Ft. Comfort
1892
Birch Point 1300
1893
Pontag 1950
Moose R.
Moose Factory
Hannah Bay
Rupert House H.B.Co
Rupert River
Kenissau Lake
Canoe Route
Tichagami River
Branch Creek
Abitibi River
Misaukum Lake
Due North Line from Head of Lake Temiscamingue
Nottawe R.
Harricanaw River
Marten River
Big Lake
Kinwapiscan L.
Mistassini Lake
1950
Mistassini
Lake Mistassini
H.B.Co
File Axe L.
1600
Wawagosic Lake
Wanwarupi L.
Mistassini River
Perboonka River
81
80
79
78
77
76
75
74
73
72
71
55
54
53
52
51
50



Published by the Royal Geographical Society



Published by the Royal Geographical Society



W. & A. K. Johnston, Edinburgh & London

INDEX.

A.

Aarau, Geographisch-kommerzielle Gesellschaft in, von A. Frey (New Publications), 402
Aberdare, Lord, on geographical congresses, 372
———————, Obituary of, by Sir G. T. Goldie, 386
Abyssinia, Russian expedition to, 168
Abyssinia, New Publications—
Il secondo viaggio in Abissinia del Mashcov, by O. Cerroti, 282
Achill Island, New Publications—
A Holiday in the Far West, by A. J. Hayes, 86
Adamawa, the German expedition to, by Dr. Passarge, 50
Adare, Cape, Victoria Land, 587, 588
Adish glacier, Caucasus, 378
Admiralty charts (New Maps), 96, 191, 510, 612
Afghan frontier, progress of work on, 271
Africa—
British Central, Progress in, 272
———————, The Protectorate of, by H. H. Johnston, 193 *et seq.*
———————, The Protectorate of, Natural History of, 217
British East, improvements in, 80
Central, development of, 444
———, fauna of the marshes of, 210
———, origin of lakes of, 112, 122
Continent of, geological changes of, 122
East, Herr Neumann's journeys in, 79, 384
——, Means of transport in, Dr. Lent's observations on, 381
East Equatorial, plants of, 79
Equatorial, Count Götzen's journey across, 78, 334
Export of ivory and caoutchouc from, 273
German South-west, Drs. Hindorf and Dove on the prospects of, 485
Portuguese West, Commercial development of, 273
South, Sir Bartle Frere's work in, 464
South-west, Sand-dunes and winds on the coast of, 385
Triangulation of, by Gen. E. F. Chapman, 467
West Coast, early discoveries of, 223
Africa, New Maps—
Carta dimostrativa della Etiopia, by Capitano Chauraud, 190
Carte de l'Afrique, Madagascar, 611
Castle Line Atlas of South Africa, by Donald Currie & Co., 287
District of Cabo Delgado, by the Nyasa Company, 190
Karte des Forschungsgebietes der Massai-Expedition des Deutschen Antisklaverei-Komite, von Dr. Baumann, 94
Karte der Gebiete von deutsch- und britisch-Ost-Afrika, by Dr. Fischer, 287
Karte der Nyasa-Expedition des Gouverneurs Obersten Freiherrn von Schele, von Dr. R. Kiepert, 95
Karte von Deutsch-Ostafrika, von Dr. R. Kiepert, 611
Stanford's Map of British Possessions in West Africa, 611
Vorläufige Skizze des Reiseweges des Lt. Graf von Götzen quer durch Central-Afrika, 509
Africa, New Publications—
A travers l'Afrique Australe, par Jules Leclercq, 607
A travers l'Afrique Centrale, by M. Maistre, 607
Actual Africa; or, the Coming Continent, by Fr. Vincent, 605
Africa, No. 6 (1894), Report by Commissioner Johnston, 181
An East African Waterway, by Commander Keane, 606
Beobachtungen auf der Ubena-Nyasa-Expedition, von G. Lieder, 182
Bericht über eine reise im Hinterlande von Bagamoyo, von Dr. Stuhlmann, 182
British East, Contributions to the geology of, by J. W. Gregory, 89
———————, Contributions to the Physical Geography of, by J. W. Gregory, 282
Die rechteckigen Schrägdachhütten Mittelafrikas, von Dr. Hösel, 282
Die Volksdichte im westlichen Central-Afrika, von Dr. Vierkandt, 606
Geographical Distribution of Tropical Diseases in Africa, by R. W. Felkin, 605
Historical Geography of the British Colonies, by C. P. Lucas, vol. iii. West Africa, 181

Africa, New Publications—*continued.*
How to live in Tropical Africa, by J. Murray, 282
I Fiumi Omo e Baro, Secondo una Carta Abissina, by M. Sacchi, 283
La Goleonde africaine, par J. Leclerc, 283
La Vallée du Niari-Kouilou, etc., by L. Jacob, 182
Le Bondou, par Dr. A. Rançon, 182
Oesterreichisch-ungarische Interessen in Ostafrika, von Dr. Baumann, 606
Reisen in Südwest-Afrika, by Herr von Uechtritz, 607
Rhodesia of To-day, by E. F. Knight, 181
South Africa, Diamonds and Gold, by Major Ricarde-Seaver, 182
Stanford's Compendium of Geography and Travel, North Africa, by A. H. Keane, 607
The British South Africa Company, 282
The Extermination of Great Game in South Africa, by H. A. Bryden, 90
The Map of Africa by Treaty, by Sir Ed. Hertslet, 606
The Partition of Africa, by J. Scott Keltie, 605
The Story of Africa and its Explorers, by R. Brown, 509
Ueber die sogenannten Zwergvölker Afrikas, von O. Lenz, 606
Ueber seine Reise quer durch Central-Afrika, von Graf von Götzen, 606
Ueber Verkehrsmittel in Ostafrika, von Dr. Lent, 181
Vorschläge zur Verbesserung der Verbindung des Kilimandjarogebiets mit der Küste, von Dr. Lent, 182
Aguilar, J. N., Estado actual y porvenir del Archipiélago Filipino (New Publications), 89
————, Mindanao, su Historia y Geografia (New Publications), 508
Agurzga, Morocco, 323
Ait Atta tribe, 329, 333
Ait Yahia, Morocco, 325
Akinfieff, M., on the Desiccation of the Caucasus, 377
Akuishi-jima, 292
Akuni-jima, 295
Alaska Boundary Survey, results of, 81, 172
———, The Position of Mount Logan in, 274
Alaska, New Maps—
Der Küstendistrikt von Süd-ost Alaska, von A. Lindenkohl, 190
Alaska, New Publications—
Délimitation de la frontière entre l'Alaska et la Colombie britannique, par M. Laussedat, 182
Alcester, Admiral Lord, Obituary of, by C. R. Markham, 497
Algeria, New Maps—
Carte topographie de l'Algérie (Service Géographique de l'Armée), 509
Alleghany, New Publications—
Winning of the West, by T. Roosevelt, 608
Alps, the Glacial Land-forms of the Margins of the, by H. R. Mill, 68
Alps, New Publications—
An Alpine Journal, by W. M. Conway, 85
Die wissenschaftliche Erforschung der Ostalpen, etc., by Ed. Richter, 178
Les variations périodiques des glaciers des Alpes, by Dr. Forel, 178
Zur Entwickelungsgeschichte des Alpinismus, etc., by L. Purtscheller, 404
Alves, A., Dom Henrique o Infante, Memoria Historica (New Publications), 187
Amami-Oshima, Luchu Islands, 292
Amazons, New Publications—
List of tribes in the Valley of the Amazon, by C. R. Markham, 609
O Amazonas, pelo Dr. O. Léal, 284
America, A Pre-Columban Discovery of, by H. Yule Oldham, 221 *et seq.*
————, —— —— ——, Letter from H. Yule Oldham on Mr. Markham's criticism of, 501
————, Discovery of, Mr. Markham's note on Mr. Yule Oldham's theory of the, 239
America, New Publications—
A round trip in North America, by Lady T. Guest, 608
Criticism of Mr. Harrisse's 'Discovery of North America,' by L. Gallois, 403
Durch Süd-Amerika, von A. Jonin, 91
La Scoperta dell' America, attribuita ai Cinesi, by L. Nocentini, 403
The North American Continent during Cambrian time, by C. D. Walcott, 90
American Ephemeris and Nautical Almanac for 1897 (New Publications), 397
————- Indians, Amongst, by Admiral Brine, Review of, by C. R. Markham, 158
————- Pacific Coast, North, Geographical work on the, in 1894 . . 171
————- Subregion, Central, of the Neotropical Region, 477
Americanas, Lenguas, Por B. Mitre (New Publications), 609
Amman, 3
Amur and Usuri, proposed continuation of the Siberian railway along the, 153
Amur Geographical Society's formation of branch society, 381
Anabar, Bay of, moraine in, 374
Anderson, W. G., explorations of the mouth of the Zangwe River, 596
Andes: see Argentine Cordillera
Andorra, the Republic of the Pyrenees, by J. Smith (New Publications), 505
Andrada, Col. Paiva de, work in South Africa, 49
Andrée, M., on Arctic Ballooning, 598

Andree's Handatlas, Geographisches Handbuch zu, von A. Scobel (New Publications), 402
Andrusoff, M., on submarine explorations of the Sea of Marmora, 175
Angara River, Siberia, 151
Angel Island, New Publications—
Geology of, by F. L. Ransome, 183
Anglo-French Boundary near Sierra Leone, 383
Annam, New Publications—
Aux Monuments anciens des Kiams, par M. Lemire, 180
Année Cartographique, by F. Schrader (New Maps), 95
Anniversary meetings and dinner of R.G.S., 377, 483
Antarctic, Mr. Burn-Murdoch's impressions of the, 173
——— Discovery, Dr. Neumayr on, 589
——— Expedition, proposed Belgian, 82
———, by M. Otto Nordenskiöld, 488
——— Exploration, work of R.G.S. Committee on, 76
Antarctic, The, voyage of, to the Antarctic, 583
Antarctic, New Publications—
From Edinburgh to the Antarctic, by W. G. Burn Murdoch, 92
Nogle optegnelser af sæl og hvalfanger "Jasons" reise i Sydishavet, by Capt. Larsen, 285
Studio preliminare per una Stazione Geografica Italiana nelle regioni polari antartiche, by G. Roncagle, 285
Anthropology, New Publications—
Eight Anthropological pamphlets, 399
Memoirs of the International Congress of Anthropology, by C. S. Wake, 186
Reprints of four papers by D. G. Brinton, 399
Anti-Atlas Range, 325
Antilia Island, 223, 234 *et seq.*
Antillean Continent, Dr. Spencer on the restoration of the, 385
——— Subregion of the Neotropical Region, 475
Antipodes Island, New Publications—
Cast away on, by J. R. Chapman, 91
Arab slave-traders on the Congo, 427
Arabs in Central Africa, 443, 445, 446
Arabia, J. T. Bent's Journey in, 379
———, Southern, Mr. Bent's Expedition to, 167
Arabia, New Publications—
Aperçu de la Structure Géologique de l'Arabie Pétrée et de la Palestine, by Prof. Hull, 87
Besuch von Lahadj in Südarabien, von Dr. Baumann, 180
Reise nach Innerarabien 1893, von Baron Nolde, 604
Arabic Language, New Publications—
Praktisches Lehrbuch der Arabischen Umgangsaprache syrischen Dialekts, von A. Seidel, 186
Arak el Amir, 2
Ararat, Pashtukhoff's ascent of, 381
Ararat, New Publications—
Pastuchows Besteigung des Ararats, von N. v. Seidlitz, 180
Arawatta, British Guiana, 338
Arctic Ballooning, M. Andrée on, 598
Arctic Coast, Post-Tertiary Deposits of the, 374
Arctic Expeditions—
Jackson-Harmsworth, 173
Arctic Siberia, Baron Toll's Expedition to, 373
Arctic, New Publications—
Le Spedizioni di R. E. Peary nella Groenlandia Nord, by Prof. G. Cora, 92
Argentine Cordillera, New Publications—
Gletscherstudien aus der Argentinischen Kordillere, von Dr. Hauthal, 284
Armenia, New Publications—
Russian Armenia and the Prospects for British Trade therein, by Dr. A. V. Markoff, 508
Artaria's Eisenbahn und Post-Communications-Karte von Oesterreich-Ungarn (New Maps), 189
Artistic Expedition to the North Pole, by J. v. Payer, 106, 488
Arusa Gallas, Somaliland, 124
Aruwimi region, forests of the, 359
Ashe, Rev. R. P., Chronicles of Uganda (New Publications), 282
Ashwanipi Lake, Labrador, 530
Asia, Central, Dr. Sven Hedin's explorations in, 154, 271
———, Mr. Littledale's journey in, 77, 272
———, Russian Expeditions in, 489
Asia, New Maps—
Wyld's Military Staff Map of Central Asia and Afghanistan, 610
Asia, New Publications—
Die Expedition der Kaiserl.-russischen Geogr. Gesellschaft nach Mittelasien, von Krahmer, 280
T'oung pao. Archives pour servir à l'Étude de l'Histoire, etc., de l'Asie Orientale, by Schlegel and Cordier, 605
Asia Minor, New Publications—
Archæologische Untersuchungen in westlichen Kleinasien, von Prof. Fabricius, 180
Askura oasis, Atlas Mountains, 324
Asmara a Mai Daro attraverso al Deca-Teofà, Escursione dall', by Capt. Ciccodicola (New Publications), 283
Assegais of the Mashonas, 40
Astrup, E., A Journey round Melville Bay, 345

Athabasca, Mount Brown and the Sources of the, by Prof. Coleman, 53 *et seq.*
——— Pass, Rocky Mountains, 58
Atlantic, New Publications—
Sur la densité et l'alcalinité des eaux de l'Atlantique et de la Méditerranée, par M. J. Y. Buchanan, 398
Atlantic Ocean, North, New Maps—
Pilot Chart of the, 192, 288, 512
Atlantic Ocean, North, New Publications—
Directory for the, by A. G. Findlay, 188
Atlas national, Le premier, et la Ménippée de Tours, by L. Drapeyron (New Publications), 403
Atlases, New Maps—
Debes' Neuer Handatlas über alle Teile der Erde, 408
Deutscher-Colonial Atlas, by P. Langhans, 287
Deutscher Schulatlas, von Dr. Lüddecke, 408
Hickmann's Taschen Atlas, 190
Justus Perthes' See-Atlas, 96
Kiepert's Grosser Hand Atlas, 190
Mappaemundi, von Dr. K. Miller, 407
Schrader's Atlas de Géographie Historique, 191, 408, 510
The *Times* Atlas, 611
World-wide Atlas of Modern Geography, by W. and A. K. Johnston, 96
Attikonak Lake and river, Labrador, 532
Aurora Australis, 584, 588
Australasia, New Publications—
La conquête de l'Océanie par les nations européennes, par P. Barré, 92
Stanford's Compendium of Geography and Travel, by F. H. Guillemard, 91
Australia, New Publications—
The Story of Australian Exploration, by R. Thynne, 91
Western, Mining Handbook to, by H. P. Woodward, 92
Austria-Hungary, New Maps—
Artaria's Eisenbahn und Post-Communications-Karte von Oesterreich-Ungarn, 189
Austrian Lakes, Dr. J. Müllner on the Atlas of, 266

B.

Baddeley, M. J. B., Thorough Guide Series. The English Lake District, and N. Wales (New Publications), 604
Baedeker, K., Handbook for travellers. Egypt (New Publications), 182
Bagamoyo, New Publications—
Bericht über eine Reise im Hinterlande von, von Dr. Stuhlmann, 182
Baker, Marcus, on surveys in the district of Columbia, 487
——— ———, Surveys and Maps of the District of Columbia (New Publications), 90
Bakuba tribe, Sankuru River, 429
Balaton Lake, soundings, etc., of, 266
Balaton Lake, New Publications—
Bericht über die Tätigkeit der Balatonsee-Kommission, by L. v. Loczy, 278, 504
Balleny Island, Antarctic Ocean, 586, 587
Balloon expedition to Arctic Regions, M. Andrée on, 598
Baltic Fleet of 1855, Reminiscences of the, by W. G. Don (New Publications), 400
Baltic, New Maps—
Skizze der neueren physikalischen in der Ostsee, von Prof. Krümmel, 609
Baluba tribe, Congo Basin, 431
Baluch-Afghan Boundary Commission, progress of, 271
Balzan, Prof., Da Trinidad à S. Cruz de Sierra e Corumbà e ritorno al Paraguay (New Publications), 91
Bangala tribe, 428
Baramba Falls, British Guiana, 343
Baratta, M., Sulla distribuzione topografica dei terremoti in Italia (New Publications), 279
Barbier, J. V., Le Projet de Carte de la Terre à l'échelle du 1/1,000,000 (New Publications), 184
Barima River, British Guiana, 337 *et seq.*
Barré, P., La conquête de l'Océanie par les nations européenes (New Publications), 92
Barren Lands, Mr. Tyrell's work in the, 269
Bartholomew's Special Map of the North-West Frontier of India (New Maps), 611
Bashan, Across Southern, by G. Robinson Lees, 1 *et seq.*
———, Southern, Photographs of, taken by G. Robinson Lees, 408
Bassett-Smith, P. W., Survey of the Macclesfield Bank, 73
Bassik-Kul, Central Asia, 155
Batetela race, Congo Basin, 431
Bats and birds of the Luchu Islands, 299
Bats of the Neotropical region, 473, 476
Batum, trade of, 77
Batwa, pigmy tribe, 430
Baumann, Dr., expedition to Zanzibar, Pemba and Mafia, 597
———————, Karte des Forschungsgebietes der Massai-Expedition des Deutschen Antisklaverei-Komite (New Maps), 94.
———————, Oesterreichisch-ungarische Interessen in Ostafrika (New Publications), 606
Bear, spectacled, of the Andes, 480
Beaune, G., La Terre Australe Inconnue. Onze Croisières aux Nouvelles-Hébrides (New Publications), 285
Beazley, Mr., Remarks on "A Pre-Columban Discovery of America," 235
Becher, H. M., Photographs of the Malay Peninsula, 192
Bedawins of Palestine, 5
Begräbnisarten der Amerikaner und Nordostasiaten, von Th. Preuss (New Publications), 188

Behaim's globe of 1492 .. 230, 234
Beira, by A. Carnegie Ross (New Publications), 607
—— railway, 27, 28
————, map showing route of the line, by Mr. Selous (New Maps), 510
—— to Salisbury, distance of railway route from, 31
——, temperature of, 45
Belgian Antarctic Expedition, proposed, 82
——— Exploration between the Welle and Darfur, 81
Belgium, New Maps—
Carte des Chemins de Fer, etc., de la Belgique, 610
Bell, D., On the Glaciation of the West of Scotland (New Publications), 87
——, H., Outlines of the Geography of the Gold Coast Colony (New Publications), 607
Benabendi, Kasai river, 429
Ben Nevis, New Publications—
The Observatory on the summit of, by E. Whymper, 87
Bent, J. T., expedition to Southern Arabia, 167, 379
Berbers of Morocco, 326
———, houses of the, 322
Berezovsky, M., expedition in Central Asia, 489
Berne, Geographical Congress at, 370
Bhutan, New Publications—
Bhutan and the Himalayas, etc., by Col. Godwin-Austen, 180
Bianco's map of Africa, 225, 230 *et seq.*
Bibliographical List of Books on Africa and the East, etc., by C. G. Luzac (New Publications), 186
Bibliographie, Orientalische, bearbeitet von Dr. L. Scherman (New Publications), 400
Bicknell, A. S., Remarks on "A Pre-Columban Discovery of America," 238
Big river, Labrador, 518
Bigelow, P., The Borderland of Czar and Kaiser (New Publications), 604
Biography, New Publications—
Brugsch, H., by W. Wolkenhauer, 400
D'Entrecasteaux, par le Baron Hulot, 400
Dictionary of National Biography, edited by Sidney Lee, 400
Frère, Sir Bartle, by J. Martineau, 400
Henry the Navigator, Prince, by A. Alves, 187
Leichhardt, J. W. L., von K. Wilke, 400
Mercator, Gerhard, by Dr. Wolkenhauer, 186
————————, von Dr. P. Dinse, 400
Novara, D. M., by Prof. F. Borsari, 400
Oppert, Ernst, by A. Miessler, 186
Oswell, W. C., by Judge Hughes, 186
Ramsay, Sir A. C., by Sir A. Geikie, 400
Biography, New Publications—*continued.*
Topley, William, by H. B. Woodward, 187
Why I became an Explorer. A chat with Mr. H. H. Johnston, 186
Wild, J., by J. J. Egli, 187
Biscay, Bay of, New Publications—
Courants, vents et orages dans la baie de Saint-Jean-de-Luz, par S. de Lagrandval, 395
Bishop, Mrs., progress of journey in Korea, China, and Russian Manchuria, 160
Blast furnaces of the Mashonas, 42
Blind, K., The Fictitious French Claim to Madagascar (New Publications), 89
Blood-brotherhood ceremony of Mzee Mogodi, 549
Blundell, H. Weld, journey in the Cyrenaïca, 168
Bokhara.—Zur Kenntnis der Bevölkerung, Bucharas, von O. Heyfelder (New Publications), 280
Bolivia, New Maps—
Mapa Elemental de Bolivia, por E. Idiáquez, 95
Bondu, New Publications—
Le Bondou. Étude de Géographie, etc., Soudaniennes, par Dr. Rançon, 182
Borchgrevink, C. E., scientific expedition to the Antarctic, 583
Börgen, Dr., Gezeiten-Erscheinungen im Trischen Kanal (New Publications), 604
Borneo, West, M. Chaper's journey in, 168
Borneo, New Publications—
Hallier's Botanische Reisen in West-Borneo, von H. Zondervan, 180
Borradaile, A. A., Notes of a Journey in Northern Mongolia in 1893 .. 582 *et seq.*
Bosra and the Roman Road, 6
Boston Basin, Geology of the, by W. O. Crosby (New Publications), 284
Botanical Mapping, Prof. Flahault on, 275
Botanical Maps, New Publications—
Sur une Carte botanique détaillée de la France, by M. Flahault, 183
Bottle-voyage, A remarkable, by Major Boyd (New Publications), 184
Botto, A., Progressi fatti negli ultimi tempi dalla cartografia nei vari Stati di Europa e piu Specialmente in Italia (New Publications), 279
Bourge, G., Novorossisk (New Publications), 280
Bourget, Lake, New Publications—
Sur l'âge du lac du Bourget, by M. Delebecque, 178
Boutroue, A., Une heure en Sicile. Un coup d'œil sur le Portugal (New Publications), 505
Bower, Capt. H., A trip to Turkistan, 240 *et seq.*
Boyd, Major, A remarkable Bottle-voyage (New Publications), 184
Brabner, J. H. F., The Comprehensive Gazetteer of England and Wales (New Publications), 504

Brahmaputra, identity of the Tsang-po with the, 258
Brazeau River, Rocky Mountains, 56
Brazil, early discovery of, 226 *et seq.*
——, supposed discovery of, by the Portuguese in 1447. Letter from Mr. J. Westlake on, 390
Bremen, town of, 589
Brine, Admiral, 'Amongst American Indians,' Review of, by C. R. Markham, 158
Brinton, D. G. Nagualism (New Publications), 399
——————, Reprints of four papers by (New Publications), 399
Brises de Montagne, Theorie des, par Prof. Chaix (New Publications), 399
British Association, Report of the Sixty-Fourth Meeting of the, Oxford, 1894 (New Publications), 401
——— Central and South Africa (*see* Africa), 181
British Colonies, New Publications—
Historical Geography of the, vol. iii., West Africa, by C P. Lucas, 181
——— Fleet, The, by Commander C. N. Robinson (New Publications), 187
——— Guiana, Four Months of Travel in, by G. G. Dixon, 337
British Guiana, New Publications—
Possibilities of, by G. G. Dixon, 91
Broughton-Bai, Die, Von J. Immanuel (New Publications), 180
Brower, Hon. J., The Mississippi river and its Source (New Publications), 608
Brown, R., The Story of Africa and its Explorers (New Publications), 509
———, Mount, and the Sources of the Athabasca, by Prof. Coleman, 53 *et seq.*
——————, height of, 58
Bruckmann's Illustrated Guides (New Publications), 395
Brückner, Dr., on variations of climate on farming, 267
Brugsch, Heinrich, by W. Wolkenhauer (New Publications), 400
Bryden, H. A., The Extermination of Great Game in South Africa (New Publications), 90
Bubanjidda, West Africa, 50
Buchan, Dr. A., on oceanic circulation, 363, 364
Buchanan, J., agricultural work of, in Nyasaland, 202
——————, J. Y., On Rapid Variations of Atmospheric Temperature (New Publications), 397
——————————, on the use of the hydrometer, 363
——————————, sur la densité, etc., de l'Atlantique et de la Méditerranée (New Publications), 398
Büchner, Dr. L., Die Insel Nikaria (New Maps), 287
Buléon, R. P., Excursion au pays des Eshiras (New Publications), 283
Bunbury, Sir E. H., Obituary of, by C. R. Markham, 498
Bura valley, East Africa, 550, 552
Burn-Murdoch, W. G., impressions of the Antarctic, 174
Busson, H., Le régime du Niger (New Publications), 283
Butembo country, Central Africa, 360

C.

Cabots, The Voyages of the, in 1497 and 1498, by S. E. Dawson (New Publications), 284
Cadell, Mr., on the action of streams, 133
Calender of Imperial University of Japan (New Publications), 405
California, New Publications—
Explorations north of the Tuolumne river, by N. F. McClure, 608
Geomorphogeny of Coast of, by A. C. Lawson, 608
Souvenir of, by J. M. Hutchings, 90
Callan, H., From the Clyde to the Jordan (New Publications), 401
Cambrian lake, Labrador, 520
Camels as means of transport in East Africa, 382
Cameroons, New Publications—
Geologische Untersuchungen im Kamerungebiete, von B. Knockenhauer, 606
Campbell Island, Antarctic Ocean, 584
Canada, Geological Survey of, explorations in Labrador, 514
———, Geological Survey of, Geographical work by the, by Dr. Dawson, 268
———, Northern, Mr. Russell's scientific exploration in, 486
Canada, New Publications—
Canals of, by T. C. Keeper, 183
Economic Development of, by Sir C. Tupper, 182
On the need of a "Coast Survey" for, by A. Johnson, 182
Progress, etc., of Scientific Investigation in, by G. M. Dawson, 90
Survey of Tides and Currents in Canadian Waters, by W. Bell Dawson, 608
The Great Dominion, Studies of Canada, by G. R. Parkin, 608
The Voyages of the Cabots, etc., by S. E. Dawson, 284
Work of the Montreal Longitude Determination, by C. H. McLeod, 183
Canadian Alaska Boundary Survey, 81
Canal and River Navigations of England and Wales, by L. B. Wells (New Publications), 85
——— traffic in France, 166
Canals and inland waterways of Germany, 379
Candeo, G., Un viaggio nella penisola dei Somali (New Publications), 283

Caoutchouc and ivory, export of, from Africa, 273.
Cape Colony, Sir Bartle Frere's work in, 464, 465
Carnivora of the Neotropical region, 473
Carolina, South, New Publications—
Government of, by E. L. Whitney, 609
Caron, E., Instructions pour les Voyageurs (New Publications), 399
Carranza, D. A., Geografia descriptiva y estadistica industrial de Chanchamayo (New Publications), 91
Carrel, F., In Syria (New Publications), 89
Carrying Trade of the World, The, by M. G. Mulhall (New Publications), 401
Cartografia: *see* Mapping
Cartographical Annual, by Fr. Schrader (New Maps), 95
Cartography, the History of, Dr. Wagner on, 590
Caspian, Desiccation of the, 377
Cassell's New Geographical Readers, England (New Publications), 504
Castle Line Atlas of South Africa, by Messrs. Donald Currie & Co. (New Maps), 287
Caucasus, Desiccation of the, M. Akinfieff's observations on the, 377
————, Dr. Radde's Journey in the, 77
————, Glaciers of the, Russian explorations of the, 378
Caucasus, New Publications—
A travers le Caucase, by E. Levier, 505
Collection of Materials for the description of Regions and Inhabitants of, 179
Ceará und die Pläne zur Verbesserung seines Klimas, von Dr. v. Ihering (New Publications), 284
Celebes, New Publications—
Reiseberichte aus Celebes, von P. and F. Sarasin, 281
Cerroti, O., Il secondo viaggio in Abissinia del Mashcov (New Publications), 282
Chaba river, Rocky Mountains, 59
Chaix, Prof. E., Theorie des Brises de Montagne (New Publications) 399
Chala, Lake, Consul C. S. Smith on, 79
Challenger Publications, The completion of, 176
———————— Review, by H. R. Mill, 360
Chamberlain, B. Hall, The Luchu Islands and their inhabitants, 289 *et seq.*, 446 *et seq.*, 534 *et seq.*
————————, and W. B. Mason, Handbook for travellers in Japan (New Publications), 507
Chamberlin, T. C., Glacial Studies in Greenland (New Publications), 286
Chambers' Concise Gazetteer of the World (New Publications), 188
———— Encyclopædia (New Publications), 187
Chanchamayo, New Publications—
Geografia descriptiva de, por D. Albino Carranza, 91
Chaper, M., Journey in West Borneo, 168
Chapman, Gen. E. F., The Triangulation of Africa, 467
————, J. R., Cast away on Antipodes Island (New Publications), 91
Charente préhistorique, La, par M. J. Fermond (New Publications), 504
Charts, New Maps—
Admiralty, 96, 191, 510, 612
—— Cancelled, 191, 511
—— Corrected, 191, 512
United States Hydrographic, 192, 288, 512
Chauraud, Capitano, Carta dimostrativa della Etiopia (New Maps), 190
Chikumbu, Yao chief, 197
Child, T., Peking (New Publications), 280
Chile, New Maps—
Planos de la Costa de Chile (Officina Hidrográfica, Chile), 288
Chile, New Publications—
Die Entwicklung der Republiken Chile und Argentinien, von Dr. Polakowsky, 284
Chimoio, Mashonaland, 29, 31
————, temperature at, 46
China, New Publications—
A Journey to the Sacred Mountain of Siao-outai-shan, by A. H. Savage Landor, 87
Architecture of, by F. Gratton, 180
China, Present and Past, by R. S. Gundry, 506
Les peuples étrangers chez les historiens Chinois, par G. Schlegel, 506
Preservation of Health in the Far East, by W. P. Mears, 403
'Society in China,' by Prof. Douglas. Review of, by W. P. Mears, 280
China and Japan, New Publications—
Corea, China, and Japan, by R. S. Gundry, 87
Der Schauplatz des Krieges zwischen Japan und China, by Freiherr von Richthofen, 87
China and Luchu, intercourse between, 313, 314
—— Seas, South, Survey of the Macclesfield Bank in, 73
—— Civilization, Western Origin of the Early, by T. de Lacouperie (New Publications), 280
Chiromo, Central Africa, 196
Chiruvu Hill Station, 29
———— Hills, temperature at the, 46
Chitral, Hunza, and the Hindu Kush, by Capt. F. E. Younghusband, 409 *et seq.*
————, temperature of, 411; political conditions, 417, 422; a durbar in, 419, 420; people of, 421, 422, 425
Chitral, New Maps—
War Map of (Surveyor-General of India), 610
Map to illustrate the Chitral Expedition, by W. & A. K. Johnston, 611
Chitral, New Publications—
Chitral and the states of the Hindu Kush, by Capt. F. E. Younghusband, 605

Chorasan: *see* Khorasan
Christian city in Southern Bashan, ruins of, 20
Christmas lectures by Dr. H. R. Mill, 166
——— Pass, Mashonaland, 34
Chronometers, New Publications—
Le Service Chronométrique à l'Observatoire de Genève, etc., par R. Gautier, 395
Churchill, Consul, visit to Table Mountain in Mozambique, 272
Chuyu, E. Africa, 558
Ciccodicola, Capt., Escursione dall' Asmara a Mai Daro attraverso al Deca-Tesfa (New Publications), 283
Circassians in Palestine, 4, 5
Civilization, The Dawn of, by G. Maspero (New Publications), 187
Clearwater lake, Labrador, 516
———— river, Rocky Mountains, 54
Climate on farming, variations of, Dr. Brückner on, 267
Cloudland, a Study on the Structure, etc., of Clouds, by Rev. W. C. Ley (New Publications), 184
Clyde Sea Area. Part III., Distribution of Temperature, by H. R. Mill (New Publications), 398
——— to the Jordan, From the, by H. Callan (New Publications), 401
Coast Lines, On the Influence of the Configuration, etc., of, upon the Rate of Secular Magnetic Declination, by H. Wilde (New Publications), 93
———— the Morphology of, 82
Cocks, R. T., Obituary of, 276
Coffee plantations in Central Africa, 211, 212, 444
Colbeck, J. A., Letters from Mandalay (New Publications), 506
Coleman, Prof., Mount Brown and the Sources of the Athabasca, 53 *et seq.*
Collot, M., La formation du relief dans le departement de la Côte-d'Or (New Publications), 604
Colomb, Sir J., Wanted, an Imperial Conference (New Publications), 187
Colonial Expansion, by Miss F. L. Shaw (New Publications), 401
Colonieu, Commdt., Voyage au Gourâra et à l'Aougueroût (New Publications), 181
Columbia, District of, Maps of the, 487
Columbia, New Publications—
Surveys and Maps of, by M. Baker, 90
Columbus, New Publications—
The First Landfall of Columbus, by J. W. Redway, 401
Raccolta di Documenti pubblicati dalla R. Commissione Colombiana, etc., 401
Commercial, No. 7 (1894), Index to Reports on Trade, etc. (New Publications), 401
———— Geography, by E. C. K. Gonner (New Publications), 187
————, Elementary, by H. R. Mill (New Publications), 188
Congo Basin, Southern, Physical Geography of the, Dr. Cornet's investigations of the, 171
————, Upper, Political Geography of, 442
——— Free State, Three Years' Travel in the, by S. L. Hinde, 426 *et seq.*
Congo Free State, New Publications—
International Beginnings of the, by J. S. Reeves, 283
Congo Railway, progress of, 385
——— Region, Count Götzen's journey in the, 359
——, Upper and Tributaries, Mr. Mohun and M. le Marinel's explorations on, 80, 81
Congress of German Geographers, 589
————, The Sixth International Geographical, 76, 177, 277, 369, 593
Conversazione and Dinner, Annual, of R.G.S., 377
Conway, W. M., An Alpine Journal (New Publications), 85
———— Climbing and Exploration in the Karakoram Mountains (New Publications), 88
———— Mountain Falls (New Publications), 397
Cook River-bed, ranges from, 64
Coolidge, W. A. B., La Haute-Engadine et le Bregaglia à travers les Siècles (New Publications), 280
Coote, C. H., The Voyage from Lisbon to India, 1505–6, of Albericus Vespuccius, translated, etc., by (New Publications), 402
Copenhagen, The Free Port of, 484
Cora, Prof. G., Le Spedizioni di R. E. Peary nella Groenlandia Nord (New Publications), 92
Coral forms on the Macclesfield Bank, 74
Cordoba, New Publications—
Las manifestaciones del Magnetismo Terrestre en la provincia de Cordoba, por O. Doering, 91
Corea: *see* Korea
——, China, and Japan, by R. S. Gundry (New Publications), 87
Cornet, Dr., investigations of the Physical Geography of the Southern Congo Basin, 171
Corsica, New Publications—
Corsica Revisited, by D. W. Freshfield, 395
Corsica, Notes on a Recent Visit, by R. Richardson, 395
Corti, Siro, Le Provincie d'Italia sotto l'aspetto geografico e storico (New Publications), 279
Côte-d'Or, La formation du relief dans le département de la, par M. Collot (New Publications), 604
Coulin, H. L., Aperçu sur la Topographie en Suisse (New Publications), 87
Coulman Island, Antarctic Ocean, 588
Courtellemont, M., visit to Mecca, 167

Crater Lakes North of Lake Nyasa, by Dr. Kerr-Cross, 112 *et seq.*
Creagh, B. P., Return of Wrecks and Casualties in Indian Waters for 1893, etc. (New Publications), 403
Crimea, New Publications—
The Crimea in 1854 and 1894, by Sir E. Wood, 86
Croatia, New Publications—
Orometrie des Lika-Cacka oder Oberkroatischen Hochlandes, etc., by Prof. K. Franić, 278
Crosby, W. O., Geology of the Boston Basin (New Publications), 284
Cuinet, V., La Turquie d'Asie (New Publications), 508
Curlew Sandpiper of Arctic Regions, 104
Currents, New Publications—
Les Courants de la Mer et leur origine, by Gen. Mathiesen, 398
Currie & Co., The Castle Line Atlas of South Africa (New Maps), 287
Curzon, Hon. G. N., medal awarded to, 592
———————, Problems of the Far East (New Publications), 281
———————, Remarks on "Chitral, Hunza, and the Hindu Kush," 424
Cyprus, New Publications—
Cyprus and its Resources, by J. E. Mavrogordato, 281
Cyrenaïca, Mr. Weld Blundell's journey in the, 168
Czar and Kaiser, The Borderland of, by P. Bigelow (New Publications), 604
Czink, Prof., Arbe. Isola dalmata nel Quarnero (New Publications), 394

D.

Dacia, Nouvelles recherches topographiques sur la Dacie, by G. Téglás (New Publications), 504
Dadelszen, E. J. von, New Zealand Official Year Book, 1894 (New Publications), 285
Dads town and river, Morocco, 325–327
Dahomey, New Publications—
L'avenir du Dahomey, par M. d'Albéca, 283
D'Albéca, M., L'avenir du Dahomey (New Publications), 283
D'Albertis, Capt., Come la navigazione da diporto possa validamente, etc. (New Publications), 397
Dalgleish, Mr., murder of, 249–251
Dalmatia, New Publications—
Arbe. Isola dalmata nel Quarnero, by Prof. Czink, 394
Die wirthschaftliche Lage Dalmatiens, by E. Gelcich, 178
Damköhler, E., Die Bevölkerung des Harzgebietes (New Publications), 179
Dana, Prof. J. D., Obituary of, by Prof. Davis, 599
D'Anghiera, P. M., e le sue relazioni sulle scoperta oceaniche, by G. Pennesi (New Publications), 403
Danube, History of the Development of the, by Dr. Ronan Hödl, 270
Danvers, F. C., The Portuguese in India, etc. (New Publications), 281
Dardanelles, New Publications—
Di alcune esperienze eseguite negli Stretti dei Dardanelli, by G. B. Magnaghi, 398
Darfur, M. de la Kéthulle's explorations between the Welle and, 81
Date cultivation in Tafilet, 333
Davis, Prof., Obituary of Prof. Dana, by, 599
——, Prof. W. M., on Physical Geography in the University, 175
———————, The Development of Certain English Rivers, 127 *et seq.*
Dawn of Civilization, The, by G. Maspero (New Publications), 187
Dawson, Dr., G. M., Geographical work of the Geological Survey of Canada in 1894..268
———————, The Progress and trend of Scientific Investigation in Canada (New Publications), 90
———————, S. E., The Voyages of the Cabots in 1497 and 1498 (New Publications), 284
———————, W. Bell, Survey of Tides and Currents in Canadian Waters (New Publications), 608
Debes' Neuer Handatlas über alle Teile der Erde (New Maps), 408
Deep-sea deposits, Dr. Murray on, 365
Deer of the Neotropical Region, 473
Delbrel, G., Notes sur le Tafilet (New Publications), 89
Delebecque, A., Atlas des Lacs Français (New Maps), 189
——————— Sur l'âge du lac du Bourget (New Publications), 178
——————— Sur quelques lacs des Alpes, de l'Aubrac et des Pyrenées (New Publications), 279
Delgado Cabo, New Maps—
District of, showing Route of the Nyasa Railway, etc., by the Nyasa Company, 190
Denmark, New Publications—
Eine landeskundliche Skizze, von Dr. Löffler, 603
——————— and Iceland, New Publications—
Murray's Handbook for travellers in, 604
D'Entrecasteaux, 1737–1793, par le Baron Hulot (New Publications), 400
De Rocca, F., Il Pamir e le regioni adiacenti (New Publications), 280
Desforges, M., pendulum observations of, 489
Des Vœux, Sir G. W., Delusions about Tropical Cultivation (New Publications), 186
Deutschen Reiches and Deutschland: *see* Germany
Deutscher Colonial-Atlas, by P. Langhans (New Maps), 287

Deutscher Schulatlas, von Dr. Lüddecke (New Maps), 408
Development of Certain English Rivers, by W. M. Davis, 127 *et seq.*
Deville, E., Lever topographique des Montagnes Rocheuses (New Publications), 183
Dewar, T. R., A Ramble round the Globe (New Publications), 188
Dhulail, Wadi, 13, 14
Diatom ooze, 366
Dickson, Mr., hydrographic research of, in the North Sea, 581
———, H. N., Report on physical investigations carried out on board H.M.S. *Jackal* (New Publications), 397
———, The Distribution of Food-fishes, etc. (New Publications), 184
Digo Country, E. Africa, 558
Dinse, P., Fjords: a Contribution to the Morphology of Coast-lines, 82
Dittmar, Prof., on the water-specimens of H.M.S. *Challenger*, 362
Dixon, G. G., Four Months of Travel in British Guiana, 337
———, The Possibilities of the North-West District of British Guiana (New Publications), 91
Dodge, R E., The Geographical Development of Alluvial River-terraces (New Publications), 398
Doering, O., Las Manifestaciones del Magnetismo Terrestre en la provincia de Cordoba (New Publications), 91
Dohrn, Prof., Dei mezzi per promuovere te esplorazioni talassografiche, etc. (New Publications), 397
Don, Dr. W. G., Reminiscences of the Baltic Fleet of 1885 (New Publications), 400
Dora Baltea Valley, 70
Dortmund-Ems Canal, Germany, 379
Douglas and Harper, Messrs., explorations in the Westland Alps, New Zealand, 61
Dove, Dr., on the prospects of German South-West Africa, 485
Drapeyron, L., Le premier Atlas National et la Ménippeé de Tours (New Publications), 403
Droppers, Garrett, Population of Japan in the Tokugawa Period (New Publications), 507
Druzes of Bashan, 22
Drygalski, Dr., Collection of Photographs of Greenland, 598
———, on South Polar Discovery and the Ice-problem, 590
Dutch East Indies, New Publications—
Glimpses of the Eastern Archipelago, 181
Nederlandsch-Indisch Plakaatboek, by Van der Chijs, 281
Duthie, J. F., Report on a Botanical Tour in Kashmir (New Publications) 281

E.

Earth: Is the Earth a Planet? by C. Robertson (New Publications), 402
Earth-Morphology, Dr. Renck on, Prof. Lapworth's review, 575
Earth's surface, forms of the, 577, 578
Earthquakes, New Publications—
Coïncidence des phénomènes météorologiques, etc., by A. Krahnass, 92
East Main River, Labrador, 514–516
East, Sacred Books of the, edited by F. Max Müller (New Publications), 404
Eckersley, W. A., Notes in Eastern Mashonaland, 27 *et seq.*
Ecuador, New Publications—
Das Küstengebiet von Ecuador, von Baron Eggers, 284
Edentata of the Neotropical Region, 472, 478
Edinburgh Summer Meeting for Educational lectures, Geography at, 599
Educational lectures by Mr. Mackinder, 76
Eggers, Baron, Das Küstengebiet von Ecuador (New Publications), 284
Egli, J. J., Der Topograph Johannes Wild (New Publications), 187
Egypt, New Publications—
Baedeker's Handbook for travellers, 182
Les Egyptiens connaissaient-ils la source de leur fleuve? par F. Ventre Bey, 283
Note sur l'Emploi d'une argile comme fertilisant dans la Haute-Égypte, par E A. Floyer, 606
Egyptians, Ancient, New Publications—
La figure de la terre connue des Anciens Egyptiens, par M. Moktar Pacha, 402
Ehlers, Otto, In Sattel durch Indo-China (New Publications), 88
El Atrash, Sheikh, 23
Elbe-Trave Canal, Germany, 379
Elephants as means of transport in East Africa, 382
El-Ghorfa province of Tafilet, 332
El Hab, Bashan, 17
Elias, Ney, Note on Mr. Borrodaile's paper, 572
Elliot, G. F. Scott, Expedition to Mount Ruwenzori, 377
———, Remarks on "Three Years' Travel in the Congo Free State," 445
Elliptical Orbits, by H. Larkin (New Publications), 395
Ems-Jade Canal, Germany, 379
Encyclopædia, Chambers' (New Publications), 187
Engadine, New Publications—
La Haute-Engadine et le Bregaglia à travers les siècles, by W. A. B. Coolidge, 280
Engano, New Publications—
Un Viaggio ad Engano, by E Modigliani, 282
England, New Publications—
Cassell's New Geographical Readers, 504

England, New Publications—*continued.*
Comprehensive Gazetteer of England and Wales, by J. H. F. Brabner, 504
Die Isoklinen Karte von Whiston, etc., by W. Felgentraeger, 178
England and Wales, New Maps—
Ordnance Surveys, 93, 189, 286, 405, 509, 610
England and Wales, New Publications—
Canal and River Navigations of, by L. B. Wells, 85
Engler, Prof., on the flora of Usambara, 170
English Lake District, Tarns of the, Mr. Marr's observations on, 77
————————. Thorough Guide Series, by M. J. B. Baddeley (New Publications), 604
English rivers, The development of certain, by W. M. Davis, 127, *et seq.*
English-speaking people, The Federation of the, by J. Milne (New Publications), 399
Erdoberfläche, Penck's Morphologie der, Einige Bemerkungen zu, von Dr. Löwl (New Publications), 396
Eritrea, New Publications—
Il mio recente viaggio nell' Eritrea Italiana, by Dr. Schweinfurth, 89
Eshiras, Excursion au pays des, par R. P. Buléon (New Publications), 283
Es-Sefalat province of Tafilet, 332
Es-Sifa province of Tafilet, 332
Estuaries, by H. L. Partiot (New Publications), 185
Etiopia, Carta dimostrativa della, by Capitan Chauraud (New Maps), 190
Europe, Central, Evaporation in, Prof. Penck's researches on, 483
Europe, New Publications—
Die Temperatur fliessender Gewässer Mitteleuropas, von Dr. Forster, 185
Uebersicht über die wissenschaftliche Litteratur zur Länderkunde Südeuropas, von Dr. Fischer, 179
European race, New Publications—
Sur l'expansion de la race européenne hors d'Europe depuis la découverte de l'Amérique, by M. Levasseur, 403
Le mouvement colonisateur de la race européenne vers l'Orient, by S. de Semenow, 403
European trade on the Niger and Benue, 53
Exhibition, Geographical, at Bremen, 591

F.

Fabricius, Prof., Archæologische Untersuchungen in westlichen Kleinasien (New Publications), 180
————————, Den Norske Lods, udgiven af den Geografiske Opmaaling (New Publications), 505
Falkland Islands, mammals of, 471
Fallex, M., Le département de la Seine-Inférieure (New Publications), 604
Far East, Problems of the, by Hon. G. N. Curzon (New Publications), 281
Felgentraeger, W., Die Isoklinen Karte von Whiston und die säkulare Aenderung der magnetischen Inklination im östlichen England (New Publications), 178
Felkin, R. W., On the Geographical Distribution of Tropical Diseases in Africa (New Publications), 605
Ferkla oasis, Morocco, 328
Fermond, M. J., La Charente préhistorique (New Publications), 504
Fez, caravan road from, to Tafilet, 334
Field Columbian Museum, Guide to, and Historical account of (New Publications), 404
Filipino : *see* Philippine Islands
Findlay, A. G., A Directory for the North Atlantic Ocean (New Publications), 188
Finland, New Publications—
Finland in the Nineteenth Century, by Finnish Authors, 505
Finmark, New Publications—
Rambles in Norsk Finmarken, by G. Lindesay, 86
Fischer, Dr., Karte der Gebiete von deutsch und britisch-Ost-Afrika (New Maps), 287
————, Dr. G. A., Am Ostufer des Victoria-Njansa (New Publications), 606
————————, map embodying explorations of, in Victoria Nyanza region, 384
————, Dr. Th., Versuch einer wissenschaftlichen Orographie der Iberischen Halbinsel (New Publications), 179
————————, Uebersicht über die wissenschaftliche Litteratur zur Länderkunde Südeuropas (New Publications), 179
Fisherman's Nautical Almanac and Tide Tables, by O. T. Olsen (New Publications), 186
Fishery Board for Scotland, investigations of the, 581
Fish-skin Tartars, The, by E. H. Fraser (New Publications), 181
Fjords : a Contribution to the Morphology of Coast-lines, by P. Dinse, 82
Flahault, Prof., on Botanical Mapping, 275
————————, Sur une Carte botanique détaillée de la France (New Publications), 183
Floquet, M., L'Unification internationale de l'heure et la division décimale du temps (New Publications), 405
Flora of Usambara, 170
Floyer, E. A., Note sur l'Emploi d'une argile comme fertilisant dans la Haute-Égypte (New Publications), 606
Fluvio-glacial deposits in the Alps, 72
Fonteneau, Contributions à l'étude de la géographie historique de Rochefort (New Publications), 85
Fontesvilla, Pungwe river, 28

Fontesvilla to Chimoio, country from, 30
Food-fishes, The Distribution of, etc., by H. N. Dickson (New Publications), 184
Forel, Prof. F. A., Le Léman, Monographie Limnologique (New Publications), 506
————, Les variations périodique des glaciers des Alpes (New Publications), 178
Formosa, Note on, 593
Formosa, New Maps—
Karte von Formosa nach den besten Quellen entworfen, von Prof. A. Kirchhoff, 406
Forster, Dr. A. E., Die Temperatur fliessender Gewässer Mitteleuropas (New Publications), 185
Fortress Lake, Rocky Mountains, 59, 60
Fototopografico, Del rilevamento, by P. Paganini (New Publications), 398
Foureau, M., Journey in the Sahara, 385
Fowler, T. W., Determination of latitude by observations in the Prime Vertical (New Publications), 396
Fox Glacier, New Zealand, 67
Fraipont, G., Les Montagnes de France, Les Vosges (New Publications), 395
France, Inland Navigation in, Mr. C. Hardinge's report on, 166
France, New Maps—
Atlas des Lacs Français, par A. Delebecque, 189
Photographs of France, Switzerland, etc., by Mr. J. Jackson, 192
Franić, Prof. K., Orometrie des Lika-Cacka oder Oberkroatischen Hochlandes (New Publications), 278
Franklin Commemoration, Meeting of R.G.S., 376
Franz Josef Glacier, New Zealand, 62-67
Fraser, E. H., The Fish-skin Tartars (New Publications), 181
French claims on the Niger Region, 383
French Geographical publications, changes in, 276
French West Africa: *see* Africa
Frere, Sir Bartle, The Biography of, Review, by Sir F. J. Goldsmid, 462
————————, The Life and Correspondence of, by J. Martineau (New Publications), 400
Freshfield, D. W., Corsica Revisited (New Publications), 395
Frey, A., Geographisch-Kommerzielle Gesellschaft in Aarau (New Publications), 402
Fritzsche, W. G., Der Verbreitung der Malaria in Italien (New Maps), 406
Frye, A. E., Primary Geography (New Publications), 188
Fulla States of Adamawa, History of the, 52
—— tribe, W. Africa, 51, 52
Fulton, D., A practical treatise on patents, etc. (New Publications), 404
Futterer, Dr. K., Ein Ausflug nach dem Süd-Ural (New Publications), 179

G.

Gaja-shima or Hebi-shima, 292
Galapagos Islands, mammals of, 471
Gallois, L., Criticism of Mr. Harrisse's 'Discovery of North America' (New Publications), 403
Gambino, Prof., Sull' Ortografia e l'Ortoepia dei nomi geografici, etc. (New Publications), 404
Game-traps in Mashonaland, 38
Gannett, H., The Average Elevation of the United States (New Publications), 90
Gara country, Arabia, 380
Garda lake, 70
——, soundings and temperature of, 266
Garua, W. Africa, 50
Gautier, R., Le Service Chronométrique à l'Observatoire de Genève, etc. (New Publications), 395
Gazetteer of the World, Chambers' Concise (New Publications), 188
Geese of Kolgueff Island, 105
Geikie, Sir A., Memoir of Sir A. C. Ramsay (New Publications), 400
Genesee river, Preglacial channel of, by A. W. Grabau (New Publications), 608
Geneva, Lake of, New Publications—
Le Léman, Monographie Limnologique, par F. A. Forel, 506
Geodesy, New Publications—
Die Polhöhe und ihre Schwankungen, etc., by R. von Sterneck, 92
Geographic Distribution of Terrestrial Animals and Plants, by Dr. Hart Merriam (New Publications), 395
Geographical Association, First Annual Meeting of the, 177
———— Congress, The Eleventh German, 589
————————, The Sixth International, 76, 177, 277, 369, 593
————————, Considerations for the triangulation of Africa, 468
Geographical Literature of the Month—
Africa, 89, 181, 282, 509, 605
America, 90, 182, 284, 608
Asia, 87, 180, 280, 506, 604
Australasia and Pacific Islands, 91, 285
Europe, 85, 178, 278, 394, 504, 603
General, 186, 399
Mathematical and Physical Geography, 92, 183, 395
Polar Regions, 92, 285
———— Names in Somaliland, 485
Geographical Names, New Publications—
Sull' Ortografia e l'Ortoepia dei nomi geografici, etc., by Prof. Gambino, 404
La transcription des noms géographiques Arabes, persans et turcs, par C. Nallino, 404
———— Pictures, published by Messrs. G. Newnes, 599
———— Publications, Changes in, 276

Geographical Readers, Langler's Picturesque (New Publications), 402
——— Society at Amur, Formation of branch society, 381
——— Studentship at Oxford, 377
——— Work of the Future, by H. R. Mill (New Publications), 402
——— Work of the Geological Survey of Canada in 1894, by Dr. G. M. Dawson, 268
——— ——— Work on the North American Pacific Coast in 1894..171
Géographie Historique, Schrader's Atlas de (New Maps), 191, 408, 510
——— Littorale, La, par J. Girard (New Publications), 185
Geographisch-Kommerzielle Gesellschaft in Aarau, von A. Frey (New Publications), 402
Geographisches Handbuch zu Andree's Handatlas, von A. Scobel (New Publications), 402
——— Jahrbuch, von H. Wagner (New Publications), 188
Geography at the Edinburgh Summer Meeting for Educational lectures, 599
——— of Mammals, No. III., The Neotropical Region, by W. L. Sclater, 471 *et seq.*
———, Physical, at the Vienna Congress, 266
———, in the University, Prof. Davis on, 175
———, of the Southern Congo Basin, Dr. Cornet's investigations of the, 171
———, The Educational value of, Dr. Lehmann on, 590
———, The Methods of, Dr. Lehmann's new publication on, 274
Geography, New Publications—
Commercial, by E. C. K. Gonner, 187
Elementary Commercial, by H. R. Mill, 188
Les grandes lignes de la Géographie physique, by M. de Lapparent, 398
Primary, by A. E. Frye, 188
Geological Antillia, The, Dr. Spencer's observations on, 385
——— History of Harbours, by N. S. Shaler (New Publications), 402
——— Map of Germany, by Dr. Lepsius (New Maps), 286
——— Survey of Canada, Geographical work by the, in 1894, by Dr. G. M. Dawson, 268
——— Survey's map of the district of Columbia, 487
Geologische und geographische Experimente, von Ed. Reyer (New Publications), 396
German Colonies Atlas, by P. Langhans (New Maps), 287
——— East Africa: *see* Africa
——— Expedition to Adamawa, by Dr. Passarge, 50
——— Geographical Conferences, 370
German Geographical Congress, The Eleventh, 589
Germany, Evaporation in, 483
———, Inland Navigation in, Mr. Whitehead's report on, 378
Germany, New Maps—
Geologische Karte des Deutschen Reichs, von Dr. Lepsius, 286
Karte des Deutschen Reiches (Königl. Preuss. Landes-Aufnahme), 93, 286, 610
Gibb, Capt., and Lieut. Arthur on excellence of roads in British East Africa, 80
Gillett river, Somaliland, 126
Girard, J., Etude sur les embouchures des fleuves (New Publications), 185
———, La Géographie Littorale (New Publications), 185
Gislason, Rev. Oddo, History of, by Rev. F. A. Walker (New Publications), 179
Glacial Land-forms of the Margins of the Alps, by H. R. Mill, 68
——— Phenomena of Newfoundland, Labrador, and Southern Greenland, 274
——— Studies in Greenland, by T. C. Chamberlin (New Publications), 286
Glaciers of North Greenland, 350
Glawa, pass of, Atlas Mountains, 322
Goa, A Topographical Survey of, 78
Gobi, the eastern, 262
Godwin-Austen, Col., Bhutan and the Himalayas East of Darjeeling (New Publications), 180
Golbin Gobi, 263
Golconde africaine, La, Par J. Leclerc (New Publications), 283
Gold Coast, New Publications—
Outlines of the Geography of the, by H. Bell, 607
Goldie, Sir G. T., Obituary of Lord Aberdare, 386
Goldsmid, Sir F. J., Obituary of Sir Henry Rawlinson, 490
———, The Biography of Sir Bartle Frere, Review, 462
Gonner, E. C. K., Commercial Geography (New Publications), 187
Götzen, Count von, Journey across Equatorial Africa, 78, 354
———, Vorläufige Skizze der Reiseweges durch Central-Afrika (New Maps), 509
Götzen, Graf von, Ueber seine Reise quer durch Central-Afrika (New Publications), 606
Gowland, W., Notes on the Dolmens and other Antiquities of Korea (New Publications), 508
Grabau, A. W., Preglacial Channel of the Genesee river (New Publications), 608
Grablovitz, G., Sulle osservazioni mareografiche in Italia (New Publications), 279
Granaries of the Mashonas, 39, 40
Grand Falls, Labrador, 526
Grandidier, A., Carte topographique de l'Imerina (New Maps), 510

Grandidier, A., Madagascar d'après les travaux de (New Maps), 407
Gratton, F., Notes upon the Architecture of China (New Publications), 180
Gravier, G., Les Français à Madagascar (New Publications), 607
Great Liakhoff Island, buried ice on the, 374
Greece, New Publications—
Die Erdbeben von Theben, etc., by Dr. Mitzopulos, 86
Green, W. S., Climbing in the Selkirks, etc. (New Publications), 608
Greenland, Dr. Drygalski's collection of photographs of, 598
————, East, beauty of scenery of, 110
————, North, glaciers of, 350
————, sinking of coast-line of, 352
————, Proposed Peary Relief expedition, 597, 598
————, Southern, Mr. Wright's observations on Glacial Phenomena of, 274
Greenland, New Publications—
Glacial Studies in, by T. C. Chamberlin, 286
Le Spedizioni di R. E. Peary nella Groenlandia Nord, by Prof. G. Cora, 92
Oprettelsen af Missions og Handelsstationen Angmagsalik paa Grønlands Østkyst, by J. Holm, 286
Gregory, Dr. J. W., Contributions to the Geology of British East Africa (New Publications), 89
————, Contributions to the Physical Geography of British East Africa (New Publications), 282
Grossmann, Dr. K., and O. Cahnheim, Photographs of Iceland (New Maps), 192
Gross-Venediger, Der, von Prof. F. Löwl (New Publications), 504
Gryse, R. P. de, A travers le Sikkim (New Publications), 180
Guarducci, F., Sui progressi fatti dalla Astronomia Geografica nella determinazione delle latitudini (New Publications), 397
Guatemala, New Maps—
Die Republik Guatemala nach eigenen Aufnahmen gezeichnet von D. C. Sapper, 190
Guatemala, New Publications—
Grundzüge der physikalischen Geographie von Guatemala, von Dr. C. Sapper, 285
Guest, Lady T., A round trip in North America (New Publications), 608
Guiana, British, Four Months of Travel in, by G. G. Dixon, 337
Guiano-Brazilian Subregion of the Neotropical Region, 479
Guillemard, Dr. F. H., Australasia (New Publications), 91
Gull rapids, Labrador, 525
Gundry, R. S., China, Present and Past (New Publications), 506
Gundry, R. S., Corea, China, and Japan (New Publications), 87
Günther, Dr. R. S., Geographical Scholarship awarded to, 377
————, Topographische Studien zur Gestaltung der Flussläufe (New Publications), 185
Gurui Mount, East Africa, 355
Guthrie, Prof., On the subjective causes of Evolution as illustrated by the Geographical Distribution of Plants (New Publications), 185

H.

Habenicht, H., Justus Perthes' See-Atlas (New Maps), 96
Hahn, C., Das heutige Chorasan (New Publications), 508
Haig, Major, on the physical features and geology of Mauritius, 597
——-, Major-General M. R., The Indus Delta Country (New Publications), 281
Haj Road, Palestine, 11, 12
Hakkaland, A Ride in, by E. A. Irving (New Publications), 87
Hamilton inlet and river, Labrador, 524, 525
Hanauer, J. E., on inscriptions in Salkhad, 24, 27
Hand-Atlas, Kiepert's grosser (New Maps), 190
Handatlas über alle Teile der Erde, E. Debes' Neuer (New Maps), 408
Hanusz, E., Les puits miraculeux de notre patrie (New Publications), 505
Harbours, The Geological History of, by N. S. Shaler (New Publications), 402
Hardinge, C., report on Inland Navigation in France, 166
Harrar, New Publications—
A recent visit to, by W. B. Harris, 182
Harris, W. B., A Journey to Tafilet, 319 *et seq.*
————, A recent visit to Harrar (New Publications), 182
Hartmann, M., Das Liwa Haleb, etc. (New Publications), 508
Harz, New Publications—
Die Bevölkerung des Harzgebietes, by Ed. Damköhler, 179
Von den Teufelsmauern bei Blankenburg, etc., by R. Steinhoff, 179: *see* Steinhoff
Hassert, Dr. Kurt, Der Name Montenegro (New Publications), 279
————, Zur kartographischen Kenntniss von Montenegro (New Publications), 179
Hauran, country south of the, 6
Hausa tribe, West Africa, 52, 53
Hauthal, Dr., Gletscherstudien aus der argentinischen Kordillere (New Publications), 284
Haut-Oubanghi: *see* Mobangi

Hay, Admiral Sir John, Remarks on "The Luchu Islands and their inhabitants," 544
Hayes, A. J., A Holiday in the Far West (New Publications), 86
Health, Preservation of, in the Far East, by W. P. Mears (New Publications), 403
Hedin, Dr. Sven, explorations in Central Asia, 271
————, Forschungen über die physische Geographie des Hochlandes von Pamir (New Publications), 88
————, on the death of M. Dutreuil de Rhins, 380
————, Topographische Skizze des kleinen Kara-Kul und des Bassik-Kul (New Maps), 610
———— ————, travels in Central Asia, 154
Heim and Schmidt, Drs., Geologische Karte der Schweiz (New Maps), 93
Helmert, Bemerkungen zu der Schrift "Die Erforschung der Intensität der Schwere im Zusammenhange," etc. (New Publications), 395
Henry the Navigator, Prince, by A. Alves (New Publications), 187
Henslow, Rev. G., The Origin of Plant-Structures, etc. (New Publications), 185
Herbert, W. V., Maps and Plans made to illustrate 'The Defence of Plevna,' by (New Publications), 405
Hert, Père de, on the progress of the Congo Railway, 385
Hertslet, Sir Ed., The Map of Africa by Treaty (New Publications), 606
Hettner, A., Die geographische Verbreitung der transportmittel des Landverkehrs (New Publications), 187
Heure, L'Unification internationale de l', el la division décimale du temps, par M. Floquet (New Publications), 405
Heyfelder, O., Zur Kenntnis der Bevölkerung Bucharas (New Publications), 280
Hickmann, Prof., geografisch-statistischer Taschen-Atlas (New Maps), 190
Highlands of Scotland, Sir A. Geikie on, 139 *and note*
Hill, Lieut.-Col. J., Trigonometrical Branch, Survey of India, Spirit-levelled Heights: Burma (New Publications), 507
Hinde, S. L., Three Years' Travel in the Congo Free State, 426 *et seq.*
Hindorf and Dove, Drs., on the prospects of German South-West Africa, 485
Hindu Kush, Chitral, Hunza, and the, by Capt. Younghusband, 409 *et seq.*
————, peaks of the, 425
Hira-shima, 292
Hobley, C. W., Upon a visit to Teavo and the Taita Highlands, 545 *et seq.*
Hödl, Dr. Ronan, History of the Development of the Danube, 270
Holdich, Col., Notes on the Antiquities, etc., of Las Bela and Makran (New Publications), 280
Holm, J., Oprettelsen af Missions- og Handelsstationen Angmagsalik paa Grønlands Østkyst (New Publications), 286
Holst, Carl, researches into the flora of Usambara, 169
Hooker, Mount, height of, 59
Hooker, Sir J., Obituary of Dr. D. Lyall, by, 602
Hösel, Dr. L., Die rechteckigen Schrägdachhütten Mittelafrikas (New Publications), 282
Hosojōfu, hempen fabric of Luchu, 461
Hübner, G., Vom Amazonenstrom nach der peruanischen Westküste (New Publications), 285
Hudson Bay, Mr. Tyrell's work to the west of, 269
Hudson's Bay Company's posts, 513
Hughes, Judge, William Cotton Oswell (New Publications), 186
Hull, Commander, Remarks on "A Pre-Columban Discovery of America," 235
Hull, Prof., Aperçu de la structure Géologique de l'Arabie Pétrée et de la Palestine (New Publications), 87
Hulot, Baron, D'Entrecasteaux 1737–1793 (New Publications), 400
Humber river, 143
Hungarian plain, Evaporation in the, 483
Hungary, the Miraculous Wells of, by E. Hanusz (New Publications), 505
Hunza, state and people of, 412–415
Hutchings, J. M., Souvenirs of California (New Publications), 90
Hydrographic Research to the North of Scotland, 581
Hydrographic Research, Swedish, in the Baltic and North Seas, by O. Pettersson (New Publications), 184

I.

Iberian Peninsula, New Publications—Versuch einer wissenschaftlichen Orographie der Iberischen Halbinsel, by Dr. T. Fischer, 179
Icebergs and masses in the Antarctic, 584, 586
Ice formations of Greenland, 598, 599
Ice-masses, buried, on Arctic Coast, 375
Iceland, New Publications—
Fra det sydøstlige Island, by T. Thoroddsen, 505
History of the Rev. Oddo Gislason, etc., by Rev. F. A. Walker, 179
Iceland, Photographs of, by Dr. Grossmann and O. Cahnheim, 192
Ideographic writing of Luchuans, 538
Idiáquez, Ed., Mapa Elemental de Bolivia (New Maps), 95
Ie-shima, 295

Ihering, Dr. v., Ceará und die Pläne zur Verbesserung seines Klimas (New Publications), 284
Ihiya-jima, 295
Imerina, Cartes de l', par Grandidier et Roblet (New Maps), 510
Imiteghr, Wad, 328
Immanuel, F., Die Trockenlegung des Poljesje (New Publications), 179
Immanuel, J., Die Broughton-Bai (New Publications), 180
Imperial Conference, Wanted, an, by Sir J. Colomb (New Publications), 187
India and Chitral, Route between, 423
India, New Maps—
Bartholomew's Special Map of the North-West Frontier of, 611
Geological Map of (Geological Survey of India), 509
Stanford's Sketch-Map of the North-West Frontier of, 611
The *Indian Engineer* Map of India, 287
India, New Publications—
After Five Years in India, by Anne C. Wilson, 281
Classified list of Reports, etc., in the Record Branch of the India Office, 506
Identification of the old Orissan port of Chitratala, by L. A. Waddell, 88
Indus Delta Country, by Major-General M. R. Haig, 281
Letters from Mandalay, by J. A. Colbeck, 506
Murray's Handbook for travellers in India, Ceylon, and Burma, 507
Records of the Botanical Survey of India, by Woodrow, Lawson, and Duthie, 281
Reise nach Südindien, von E. Schmidt, 88
Spirit-levelled Heights (No. 1, Burma), Survey of India, by Lieut.-Col. J. Hill, 507
The Portuguese in India, by F. C. Danvers, 281
Village Communities in Southern India, by C. Krishna Menon, 506
Wrecks and Casualties in Indian Waters for 1893, by B. P. Creagh, 403
Indian and African in Nyasaland, 80
—— Archipelago, Dr. Ten Kate's travels in the, 163
—— Government Surveys (New Maps), 94, 406
Indian Ocean, New Publications—
Beiträge zur Kenntniss, etc., des Indischen Ozeans, by W. Meinardus, 396
—— Survey Department's Survey of Goa, 78
Indo-China, New Maps—
Carte de l'Indo-Chine, par M. Pavie, 189
Indo-China, New Publications—
In Sattel durch Indo-China, von Otto Ehlers, 88
La Colonisation Française en Indo-Chine, by M. de Lanessan, 605
Indus Delta Country, by Major-General M. R. Haig (New Publications), 281
Inland Navigation in France, Mr. C. Hardinge's report on, 163
—— in Germany, Mr. Whitehead's report on, 378
Innsbruck, Mayr's quarry near, 71
Inscriptions on ruins in Bashan, 26
Insect pests in Mashonaland, 38
Insectivora of the Neotropical Region, 473
Inyazuri river, granaries near the, 39
Iri-omote-jima, 297, 303
Irish Channel, New Publications—
Die Gezeiten-Erscheinungen im Irischen Kanal, by Dr. Börgen, 604
Irkutsk and Chita, railway between, 152
Ironstone at Cape York, Lieut. Peary's visit to, 488
Irving, E. A., A Ride in Hakkaland (New Publications), 87
Isar river, 72
Ishigaki-jima, 296
Italian Geographical Society's publications, changes in, 276
Italy, New Maps—
Verbreitung der Malaria in Italien, von W. G. Fritzsche, 406
Italy, New Publications—
Aggruppamenti principali dei laghi italiani, by O. Marinelli, 86: *see* Marinelli
Le Provincie d'Italia sotto l'aspetto geografico e storico, by S. Corti, 279
Sulla distribuzione topografica dei terremoti in Italia, by M. Baratta, 279
Sulle carte magnetiche d'Italia, etc., by P. Tacchini, 279
Sulle osservazioni mareografiche in Italia, etc., by G. Grablovitz, 279
Itende and Itamba, volcanic lakes, Central Africa, 115
Ivanof, A., Sur les lois des variations des latitudes de Poulkovo (New Publications), 396
Ivory and caoutchouc, export of, from Africa, 273
Iwo-ga-shima, Luchu Islands, 292
Izena-shima, 295

J.

Jackal, H.M.S., Report on physical investigations carried out on board, by H. N. Dickson (New Publications), 397
Jackson-Harmsworth Expedition, progress of the, 173
Jackson, J., Photographs of France, Switzerland, etc. (New Maps), 192
Jacob, L., La Vallée du Niari-Kouilou (New Publications), 182
Jaluit, New Publications—
Bemerkungen über das Klima von Jaluit, by Dr. Steinbach, 285
Jamaica, fauna of, 477
Jambulu tribe, Lualaba river, 441
Japan and Luchu, intercourse between, 306 *et seq.*
——, scenery in, 303

Japan, New Publications—
Bibliography of, by Fr. von Wenckstern, 507
Handbook for travellers in, by Chamberlain and Mason, 507
Imperial University of Japan: The Calendar, 405
Japan, Korea, and China, Problems of the Far East, by Hon. G. N. Curzon, 281
Music of, by Miss L. Smith, 88
Population of, by G. Droppers, 507
Railway system in, by F. H. Trevithick, 507
Japan and China, New Publications—
Der Schauplatz des Krieges zwischen Japan und China, von Freiherr von Richthofen, 87
Jeaffreson, J. R., letter from, on an expedition to Novaya Zemlya, 84
Jebel Saghru, 325
Jerash, 4
Jerf oasis, Morocco, 330
Jews in Morocco, 326
Johnson, A., On the need of a "Coast Survey" for the Dominion of Canada (New Publications), 182
Johnston, H. H., Africa, No. 6 (1894) (New Publications), 181
————————, The British Central Africa Protectorate, 193 *et seq.*
————————, Note to accompany map by, 219
————————, Why I became an Explorer (New Publications), 186
Johnston, W. and A. K., Map to illustrate the Chitral Expedition (New Maps), 611
————————, World-Wide Atlas of Modern Geography (New Maps), 96
Jonin, A., Durch Süd-Amerika (New Publications), 91
Jordan, From the Clyde to the, by H. Callan (New Publications), 401
Jukes-Brown, Mr., on arrangement of river courses, 133

K.

Kagera river, navigability of, 445
Kakeroma-shima, Luchu Islands, 293
Kama river, Siberia, 147
Kamerun: *see* Cameroons
Kan, Prof. Dr., Obituary of Dr. P. J. Veth by, 600
Kaniapiskau lake, Labrador, 518, 519
Kannenberg, Die "Paphlagonischen" Felsengräber (New Publications), 280
Kara Balghassun fort, 564–566
Karachunkar valley, 246
Karakoram Mountains, New Publications—
Climbing and Exploration in the, by W. M. Conway, 88
Kara-Kul, The Little, Central Asia, 154
Kara-Kul und Bassik-Kul, Der kleine, von Dr. Sven Hedin (New Publications), 605
Kara-Kul und Bassik-Kul, Topographische Skizze, von Dr. Sven Hedin (New Maps), 610
Karatéghine et Darvoz, par F. de Rocca (New Publications), 506
Kasai river and natives, 428
Kashmir, New Publications—
On the Kashmir Frontier, by Capt. F. E. Younghusband, 507
Report on a Botanical Tour in, by J. F. Duthie, 281
Kasongo, Congo basin, 435, 442
Kate, Dr. Ten, travels in the Indian Archipelago, 163
Katenge chief and island, Lualaba river, 439, 440
Keane, A. H., North Africa, Stanford's Compendium of Geography and Travel (New Publications), 607
Keane, H. J., An East African Waterway (New Publications), 606
Kedah-Senggora or Malay Trans-Peninsular Railway (New Publications), 605
Keefer, T. C., The Canals of Canada (New Publications), 183
Kelat ez Zerka, 9, 10
Keltie, J. Scott, The Partition of Africa, 2nd edit. (New Publications), 605
Kenaman river, Labrador, 524
Kerama-jima, 295
Kerr, Dr. R., Pioneering in Morocco (New Publications), 89
Kerr, M. B., and R. H. Chapman, Table of Elevations within the Pacific Slope (New Publications), 605
Kerr-Cross, Dr., Crater Lakes north of Lake Nyasa, 112 *et seq.*
Kéthulle, M. de la, Exploration between the Welle and Darfur, 81
Khorasan, New Publications—
Das heutige Chorasan, von C. Hahn, 508
Kiams, Aux Monuments anciens des, par M. Lemire (New Publications), 180
Kiepert, Dr. R., Karte der Nyasa-Expedition des Gouverneurs Obersten Freiherrn von Schele (New Maps), 95
————————, Karte von Deutsch-Ostafrika (New Maps), 611
Kiepert's Grosser Hand-Atlas (New Maps), 190
Kieyo Mountain, Nyasaland, 115
Kikai-ga-shima or Kikai-jima, 293
Kilimanjaro Botanical Collection of Consul C. S. Smith, 79
Kilimanjaro, Dr. Volkens' researches on, 595
Kilimanjaro, New Publications—
Exkursionen am Kilima-Ndjaro, by Dr. G. Volkens, 607
Vorschläge zur Verbesserung der Verbindung des Kilimandjarogebiets mit der Küste, von Dr. Lent, 182
Killian pass, Turkistan, 242
Kinunka, Nyasaland, 121
Kirchhoff, Dr. A., Karte von Formosa nach den besten Quellen entworfen von (New Maps), 406

Kirk, Sir John, Remarks on "The British Central Africa Protectorate," 215
Kirunga cha gongo peak, Central Africa, 78, 358
Kisaka district, Central Africa, 356
Kisigau mount and natives, East Africa, 554, 555
Kisiwa lake, Nyasaland, 115
Kisukuma, Das, Grammatische Skizze, etc., von A. Seidel (New Publications), 283
Kiunguvuvu, volcanic lake, Central Africa, 114
Kivu lake, Central Africa, 78, 356, 359
Kiwirwa river, Nyasaland, 116
Kleinasien: *see* Asia Minor
Klemm, G., Gletscherspuren im Spessart und östlichen Odenwald (New Publications), 179
Klemm, L. R., Relief Practice Maps of Europe, etc. (New Maps), 96
Knight, E. F., Rhodesia of To-day (New Publications), 181
Knockenhauer, B., Geologische Untersuchungen im Kamerungebiete (New Publications), 606
Kobdo, Mongolia, 571, 574
Koksoak river, Labrador, 519–521
Kolgueff Island, by A. Trevor-Battye, 97 *et seq.*
————, position and rivers of, 99, 102
————, lakes of, 101
————, Forgotten Visits, Letter from A. Montefiore on, 277
Konde country and people, Central Africa, 113, 118
Kootenay plains, Rocky Mountains, 54
Koran, The, or Alkoran of Mohammed, translated from the original Arabic (New Publications), 403
Korea, China, and Russian Manchuria, Mrs. Bishop's journey in, 160
Korea, New Publications—
Corea or Cho-sen, the Land of the Morning Calm, by A. H. Savage-Landor, 508
Die Broughton-Bai, von J. Immanuel, 180
Notes on Corea and its People, by H. S. Saunderson, 508
Notes on the Dolmens, etc., of, by W. Gowland, 508
Kostinsky, S., Contributions to Terrestrial Magnetism (New Publications), 184
————, Sur les variations de la latitude de Poulkovo (New Publications), 396
Krahmer, D., Die Expedition der Kaiserl.-russischen Geogr. Gesellschaft nach Mittelasien (New Publications), 280
————, Kulikowski's Untersuchungen über das Zuwachsen, etc. (New Publications), 279
Krahnass, A., Coïncidence des phénomènes météorologiques, etc. (New Publications), 92
Kramp, F. G., Die Geschiedenis der Ontdekking van het eiland Sachalin (New Publications), 508
Krasnoyarsk and Irkutsk, railway between, 151
Kriva lake and river, Kolgueff Island, 101
Kropotkin, P., The Great Siberian Railway, 146
Krümmel, Prof., Skizze der neueren physikalischen Expeditionen in der Ostsee (New Maps), 609
————, on oceanographical observations of war-vessels and merchant-ships, 590, 591
Kuchar and Bugur districts, game of, 253, 254
Kuchi-no-Erabu-shima Island, 291, 292
Kuen-lun range, 265
Kume-jima, 295
Kunjut tribe, Central Asia, 241
Kuro-shima, Luchu Islands, 292
Kurush, Caucasus, 378
Kuyuni river, British Guiana, 340
Kwilu river, New Publications—
La Vallée du Niari-Kouilou, par Léon Jacob, 182
Kyakhta and Urga, region between, 261

L.

Labrador, fruits of, 529; fish of rivers and lakes, 531
————, Mr. Low's work in, 268
————, Mr. Wright's observations on Glacial Phenomena of, 274
———— Peninsula, Explorations through the Interior of the, by A. P. Low, 513 *et seq.*
Lacouperie, T. de, Western Origin of the Early Chinese Civilization, etc. (New Publications), 280
Lacquer-work of Luchu, 462
Lagos, New Publications—
La Colonie de Lagos, etc., par Dr. Rouire, 282
Lagrandval, S. de, Courants, vents et orages dans la baie de Saint-Jean-de-Luz (New Publications), 395
Lahore, New Publications—
Gazetteer of the Lahore District, by G. C. Walker, 180
Lake District, The Tarns of the, Mr. Marr's observations on, 77
Lakeland, The Tarns of, by J. E. Marr (New Publications), 279
Lakes, New Publications—
Sur quelques lacs des Alpes, etc., by M. Delebecque, 279
Lamaism, Dr. Waddell's researches on, 594
Lamas of Patagonia, 480
Land, New Publications—
L'extension ancienne des Terres australes, par F. Prien, 183
L'Age des formes topographiques, par A. de Lapparent, 183

Land-forms, Glacial, of the Margins of the Alps, by H. R. Mill, 68
Land-surface, forms of the, 579
Land-transport, New Publications—
Die geographische Verbreitung der Transportmittel des Landverkehrs, von A. Hettner, 187
Landor, A. H. Savage, A Journey to the Sacred Mountain of Siao-outai-shan (New Publications), 87
Landrieu, M. G., Majunga, son importance son avenir (New Publications), 89
Lanessan, M. de, La Colonisation Française en Indo-Chine (New Publications), 605
Langhans, P., Deutscher Colonial-Atlas (New Maps), 287
Langler's Picturesque Geographical Readers (New Publications), 402
Language of Luchuans, 536
Languedoc, New Publications—
Le Littoral du Bas-Languedoc, par Prof. L. Malavialle, 504
Lapparent, A. de, L'Age des formes topographiques (New Publications), 183
———— ————, Les grandes lignes de la Géographie physique (New Publications), 398
Lapworth, Prof., Review on Dr. Penck's "Morphology of the Earth's Surface," 575
Larkin, H., Elliptical Orbits (New Publications), 395
Larsen, Capt., Nogle optegnelser af sael og hvalfanger "Jasons" reise i Sydishavet (New Publications), 285
Las Bela and Makran, New Publications—
Notes on the Antiquities, etc., of, by Col. Holdich, 280
Last, J. T., new road in Zanzibar Island, 80
Latif, Syad Muhammad, History of the Panjáb (New Publications), 507
Latitude, New Publications—
Determination of latitude by observations in the Prime Vertical, by Th. Fowler, 396
Die Polhöhe und ihre Schwankungen, etc., by R. von Sterneck, 92
On the variation of latitude at Rockville (U.S. Geodetic Survey), 396
On the variation of latitude at Waikiki, by E. Preston, 396
Sui progressi fatti dalla Astronomia geografica nella determinazione delle latitudini, by F. Guarducci, 397
Sur les lois des variations des latitudes de Poulkovo, by A. Ivanof, 396
Sur les variations de la latitude de Poulkovo, par S. Kostinsky, 396
Variations de la latitude de Poulkovo, par M. Nyrén, 396
Laussedat, M., Reconnaissance, etc., pour la délimitation de la frontière entre l'Alaska et la Colombie britannique (New Publications), 182
Lawson, A. C., Geomorphogeny of the Coast of Northern California (New Publications), 608
Lawson, M. A., Notes on a Tour in Travancore (New Publications), 281
Léal, Dr. O., O Amazonas (New Publications), 284
Leclerc, J., La Golconde africaine (New Publications), 283
Leclercq, J., A travers l'Afrique Austral (New Publications), 607
Leder, H., Eine Sommerreise in der nördlichen mongolei (New Publications), 508
Lee, Sidney, Dictionary of National Biography (New Publications), 400
Lees, G. Robinson, Across Southern Bashan, 1 *et seq.*
————————, Photographs of Southern Bashan (New Maps), 408
Lehmann, Dr., new publication on the methods of geography, 274
————, on the Educational Value of Geography, 590
Leichhardt, J. W. L., von K. Wilke (New Publications), 400
Léman: *see* Geneva, Lake of
Lemire, Ch., Aux monuments anciens des Kiams (New Publications), 180
Lena river, Siberia, 373
Lent, Dr., on the means of transport in East Africa, 381
————, Ueber Verkehrsmittel in Ostafrika (New Publications), 181
————, Vorschläge zur Verbesserung der Verbindung des Kilimandjarogebiets mit der Küste (New Publications), 182
Lenz, O., Ueber die Bedeutung der Termiten für Erdbewegung (New Publications), 398
————, Ueber die sogenannten Zwergvölker Afrikas (New Publications), 606
Leopoldville, Stanley Pool, 427
Lepsius, Dr., Geologische Karte des Deutschen Reichs (New Maps), 286
Leroy-Beaulieu, A., The Empire of the Tsars and the Russians, translation of (New Publications), 86
Levasseur, E., La Question des Sources Mississippi (New Publications), 183
————————, Le Salaire aux Etats-Unis (New Publications), 609
————————, Sur l'expansion de la race Européenne hors d'Europe (New Publications), 403
Levier, E., A travers le Caucase (New Publications), 505
Ley, Rev. W. C., Cloudland, a Study on the Structure, etc., of Clouds (New Publications), 184
Liakhofi Islands, buried ice on the, 374
Library of the Royal Colonial Institute, Catalogue of the (New Publications), 405
Lieder, G., Beobachtungen auf der Ubena-Nyasa-Expedition (New Publications), 182
Lightning, Protection from, by A. McAdie (New Publications), 403

Lights of the World, List of (U.S. Hydrographic Office) (New Publications), 404
Likoma Islands, Note on the, 597
Lindenkohl, A., Der Küstendistrikt von Süd-Ost Alaska (New Maps), 190
Lindesay, G., Rambles in Norsk Finmarken (New Publications), 86
Lipari Islands, New Publications—
Die Liparischen Inseln. Achtes Heft, by Archduke Ludwig Salvator, 86
Littledale, Mr., second journey to Central Asia, 77, 272
———, on the death of M. Dutreuil de Rhins, 484
Livingstone Range, Lake Nyasa, 114
Liwa Haleb, Das, von M. Hartmann (New Publications), 508
Lloyd, T. H., on the geology of Mlanje, 218
Lob, Dr. Sven Hedin's expedition to, 157
Locust plagues in Central Africa, 444, 445
Lóczy, L. v., Bericht über die Tätigkeit der Balatonsee-Kommission (New Publications), 504
———, work on the Balaton Lake, 266
Löffler, Dr., Dänemark, Eine landeskundliche Skizze von (New Publications), 603
Logan, Mount, Alaska, 172
———, position of, 274
Lokris, New Publications—
Die zwei grossen Erdbeben in Lokris, von Dr. Skuphos, 395
Lomami river, Congo Basin, 432
London, the Sixth International Geographical Congress at, 370, 371
Loppo, plain of, 70
Lorié, Dr., De gedaantewisselingen der Schelde en der Maas (New Publications), 504
Lorraine, New Publications—
Das Deutsche Sprachgebiet Lothringens, von Dr. H. Witte, 279
Louis, J. A. H., The Gates of Thibet (New Publications), 280, 507
Low, A. P., Explorations through the Interior of the Labrador Peninsula, 513 *et seq.*
———, work in Labrador, 268
Lowa river and district, Central Africa, 360
Löwl, Prof. F., Der Gross-Venediger (New Publications), 504
———, Einige Bemerkungen zu Penck's Morphologie der Erdoberfläche (New Publications), 396
Lualaba river, Central Africa, 436
Luapula river, entrance of, into Lake Mweru, 391
Lucas, C. P., A Historical Geography of the British Colonies. Vol. iii., West Africa (New Publications), 181
Luchu, Etymology of the name, 542
——— Islands and their inhabitants, by B. Hall Chamberlain, 289 *et seq.*, 446 *et seq.*, 534 *et seq.*
Luchu Islands, fauna and flora, 299–301; history, 304 *et seq.*; meteorological conditions, 302, 303; population and geology, 298
Luchuans, physical type of, 318; tattooing, 447; processions, 450; graves and funerals, 451–453; weddings, 455; houses and towns, 456; schooling, 457; locomotion and steam communication, 458, 459; crime, 460; industries, 461, 462; theatres and amusements, 534, 535; language, 536; *Shō-chū-ma* writing, 538; social life, 540; spelling of place-names, 544
Lüddecke, Dr., Deutscher Schulatlas (New Maps), 408
Ludwig Salvator, Archduke, Die Liparischen Inseln. (New Publications), 86
Lufisa river, Nyasaland, 114, 116
Luk-chun depression, M. Robarovsky's explorations in the, 489
Luku, Somaliland, 124
Lukuga river, Central Africa, 441, 443
Lupungu, chief of Balubas, 431
Lusambo, capital of Lualaba district, 429
Lushais, The, and the land they live in, by Capt. Shakespear (New Publications), 281
Luzac, C. G., Bibliographical List of Books on Africa and the East, etc. (New Publications), 186
Lyall, Dr. David, Obituary of, by Sir J. Hooker, 602

M.

Macclesfield Bank, South China Seas, Survey of the, 73
Mackay, Dr. A., Obituary of, 276
Mackenzie, Capt., work on the Afghan frontier, 271
Mackinder, H. J., Educational lectures given by, 76
——— results of examination on lectures by, 165
Madagascar, New Maps—
Cartes de l'Imerina, par Grandidier et Roblet, 510
Madagascar d'après les travaux d'Alfred Grandidier, 407
Madagascar, New Publications—
The Fictitious French Claim to Madagascar, by K. Blind, 89
Les Français à Madagascar, par G. Gravier, 607
Madagascar en 1894, par A. Martineau, 89
Majunga, son importance, son avenir, par M. Landrieu, 89
Maghra, desert of, subterranean aqueducts in, 330
Maghreb el Aksa, Le Climat du, par A. Milhaud (New Publications), 607
Magnaghi, G. B., Di alcune esperienze eseguite negli Stretti dei Dardanelli (New Publications), 398
Magnetic Declination, On the Influence of the Configuration, etc., of Coast Lines upon the Range of, by H. Wilde (New Publications), 93

Magnetism, New Publications—
Contributions to Terrestrial Magnetism, by Kostinsky, 184
Maguire, Capt., work in Nyasaland, 214
Maistre, C., A travers l'Afrique Central, du Congo au Niger (New Publications), 607
Majunga, son importance, son avenir, by M. Landrieu (New Publications), 89
Makanjira, conquest of, 201
Make-jima Island, Luchu Islands, 291
Malavialle, L., Le Littoral du Bas-Languedoc (New Publications), 504
Malay Archipelago, New Publications—
Glimpses of the Eastern Archipelago, 181
Malay Peninsula, Photographs of the, by Mr. H. M. Becher (New Maps), 192
Malay Trans-Peninsular Railway, The (New Publications), 605
Mammals, The Geography of; No. III. The Neotropical Region, by W. L. Sclater, 471 *et seq.*
————, extinct, of the Neotropical Region, 481
Mammoth remains in N. Siberia, 374
Mandalay, Letters from, by J. A. Colbeck (New Publications), 506
Manyanga and Manyema tribes, 427
Maples, Archdeacon Chauncy, Remarks on "Three Years' Travel in the Congo Free State," 444
Mappaemundi, Die ältesten Weltkarten, von Dr. K. Miller (New Maps), 288, 407
Mapping, New Publications—
Progressi fatti negli ultimi tempi dalla cartografia, etc., by A. Botto, 279
Map of the World on the scale of One-Millionth, 275
Maps, Mr. R. Louis Stevenson on, 83
Maps, New—
Africa, 94, 190, 287, 407, 509, 611
America, 95, 190
Asia, 94, 189, 287, 406, 509, 610
Charts, 96, 191, 288, 612
Europe, 93, 189, 286, 405, 509, 609
General, 95, 190, 287, 407, 510, 611
Maps, New Publications—
Le Projet de Carte de la Terre à l'échelle du 1/1,000,000, par M. Barbier, 184
Marindin, H. L., On the changes in the ocean shore-lines of Nantucket Island (New Publications), 284
Marine denudation, 140
——— deposits, Dr. Murray on, 365
Marinel, M. Le, explorations on the Mobangi, 81
Marinelli, O., Aggruppamenti principali dei laghi italiani (New Publications), 86
Markham, C. R.—
A List of the Tribes in the Valley of the Amazon (New Publications), 609
Admiral Brine's 'Amongst American Indians,' 158
Note on Mr. Yule Oldham's theory of the Discovery of America in 1447..239
Markham, C. R.—*continued.*
Obituary of Admiral Lord Alcester, 497
———— Sir Edward Bunbury, 498
———— Capt. Parker Snow, 500
On the qualities of Sir Bartle Frere, 466
Reception at the R.G.S., 75
Remarks on "A Journey to Tafilet," 335
———— "Chitral, Hunza, and the Kindu Kush," 425, 426
———— "Four Months of Travel in British Guiana," 345
———— "Kolgueff Island," 103, 106
———— subscriptions for the International Congress, 503
———— the afternoon technical meetings, 233, 277
———— "The British Central Africa Protectorate," 214, 217
———— the deaths of Lord Aberdare, Sir H. Rawlinson, and Sir E. H. Bunbury, 392, 393
———— the improvements in the Society's premises, 84
———— the International Geographical Congress, 177
———— "The Luchu Islands and their inhabitants," 544, 545
———— "Three Years' Travel in the Congo Free State," 446
Report on examination on lectures by Mr. Mackinder, 165
Markoff, Dr. A. V., Russian Armenia, etc. (New Publications), 508
Marmora, Sea of, Russian Exploration of the, 175
Marr, J. E., on the Tarns of the English Lake District, 77
————, The Tarns of Lakeland (New Publications), 279
Marsupials of the Neotropical Region, 472, 478
Martin, Prof. K., Ueber seine Reise in den Molukken (New Publications), 181
Martineau, A., Madagascar en 1894 (New Publications), 89
Martineau, J., The Life and Correspondence of Sir Bartle Frere (New Publications), 400
Mashonaland and Manika, Note on Mr. Selous' Map of, by Mr. Ravenstein, 46
————, big-game shooting and insect pests of, 37, 38
————, Eastern, Notes in, by W. A. Eckersley, 27 *et seq.*
Mashonaland, New Publications—
Rhodesia of To-day, by E. F. Knight, 181
Mashonas, trades of the, 40
————, dress and habits of the, 43, 44
Maspero, G., The Dawn of Civilization (New Publications), 187
Massachusetts, New Publications—
Changes in the ocean shore-lines of Nantucket Island in, by H. L. Marindin, 284
Mastuj, fort of, 424

Matadi to Stanley Pool, road from, 427
Mathiesen, Gen., Les Courants de la Mer et leur origine (New Publications), 398
Mauritius, Physical features and Geology of, Major Haig on the, 597
Mavrogordato, T. E., Cyprus and its Resources, (New Publications), 281
Mbaka river, Nyasaland, 116
Mbaruk-bin Raschid, 558, 560
Mbololo, Taita Highlands, 548
McAdie, A., Protection from Lightning (New Publications), 403
McClure, N. F., Explorations north of the Tuolumne River (New Publications), 608
McLeod, C. H., Memorandum on the Work of the Montreal Longitude Determination (New Publications), 183
Mears, W. P., Review of Prof. Douglas' 'Society in China' (New Publications), 280
———, The Preservation of Health in the Far East, etc. (New Publications), 403
Mecca, M. Courtellemont's visit to, 167
Medals of the Paris Geographical Society, 599
Medals, Royal, and other awards, Award of, 592
Mediterranean, New Publications—
Berichte der Commission für Erforschung des östlichen Mittelmeeres, 398
Meetings of the R.G.S., 1894–95 . . 84, 85, 177, 178, 277, 278, 392, 503, 603
Meinardus, W., Beiträge zur Kenntniss des Indischen Ozeans (New Publications), 396
Mekong, New Publications—
Notes of a Journey on the Upper Mekong, by H. Warington Smyth (New Publications), 508
Mellor, E. W., Notes of a Journey in Portugal (New Publications), 505
Melville Bay, A Journey round, by E. Astrup, 345
———, glaciers of, 350
Menihek Lake, Labrador, 530
Menon, C. Krishna, Village Communities in Southern India (New Publications), 506
Mercator, Gerhard, von Dr. P. Dinse (New Publications), 400
———, by Dr. Wolkenhauer (New Publications), 186
Merriam, Dr. C. H., Laws of Temperature-Control of the Geographic Distribution of Terrestrial Animals and Plants (New Publications), 395
Mexican and United States Boundary, remarking of, 487
Mexico, Gulf of, submarine valleys of the, 386
Mexico, New Publications—
Anuario del Observatorio Astronomico Nacional de Tacubaya, 183
Michigan, New Publications—
Sailing directions for Lake Michigan, 609
Michikamau Lake, Labrador, 531, 532
Mierisch, Dr. B., Geologische Karte des nördlichen Teiles der Republik Nicaragua (New Maps), 510
Miessler, A., Ernst Oppert (New Publications), 186
Milhaud, A., Le Climat du Maghreb el Aksa (New Publications), 607
Mill, Dr. H. R., Christmas lectures by, 166
———, Temperature of Soil, Water, and Air (New Publications), 397
———, The *Challenger* Publications, Review of, 360
———, The Clyde Sea Area. Part III., Distribution of Temperature (New Publications), 398
———, The Geographical Work of the Future (New Publications), 402
———, The Glacial Land-forms of the Margins of the Alps, 68
———, The Realm of Nature; an Outline of Physiography (New Publications), 184
Miller, Dr., Mappaemundi, Die ältesten Weltkarten (New Maps), 288, 407
Milne, J., The Federation of the English-speaking People (New Publications), 399
Mindanao, su Historia y Geografia, por J. N. Aguilar (New Publications), 508
Mingoi, ancient underground city of, 255
Minipi river, Labrador, 525
Misfiwa river, Morocco, 320
Mississippi, New Publications—
La Question des Sources du Mississippi, par M. E. Levasseur, 183
The Mississippi River and its Source, by Hon. J. Brower, 608
Missouri, New Publications—
Determinations of latitude, etc., of the Laws Observatory of the University of the State of Missouri, by M. Updegraff, 284
Mistassini, Lake, Labrador, survey of, 514
Mitre, B., Lenguas Americanas (New Publications), 609
Mitzopulos, Dr. C., Die Erdbeben von Theben und Lokris (New Publications), 86
Miyako-jima, 296
Mkuyuni, E. Africa, 554
Mlanje, Mount, beauty of, 206–208
———, cedars of, 204, 208, 213, 216
———, Mr. A. Sharpe's journey to, 169
———, Some short notes on the geology of, 218
Mobangi river, rapids of the, 81
Mobangi, New Publications—
Les rapides du Haut-Oubanghi, 283
Mockler-Ferryman, Capt., Photographs of Norway (New Maps), 192
Modigliani, E., Un Viaggio ad Engano (New Publications), 282
Mohun, Mr., explorations on the Upper Congo and tributaries, 80

Moktar Pacha, La figure de la terre connue des anciens Egyptiens (New Publications), 402
Moltke Range, New Zealand, 62
Moluccas, New Publications—
Ueber seine Reise in den Molukken, von Prof. K. Martin, 181
Mombasa, physical features of the neighbourhood of, 560
Mombasa to Kibwesi, road from, 80
Monaco, Prince of, Sur les premières campagnes scientifiques de la *Princess Alice* (New Publications), 397
Mongolia, M. Obrucheff's Explorations in, 260
————, Central, geology of, 264
————, Northern, Notes of a Journey in, in 1893, by A. A. Borradaile, 562 *et seq.*
Mongolia, New Publications—
Eine sommerreise in der nördlichen Mongolei von H. Leder, 508
Mongolia and Tibet, New Publications—
Diary of journey through, by W. W. Rockhill, 506
Monkeys of the Neotropical Region, 474, 478
Montefiore, Arthur, letter from, on forgotten visits to Kolgueff Island, 277
Monteil, Col., De Saint-Louis à Tripoli par le Lac Tchad (New Publications), 607
Montenegro, New Publications—
Der Name Montenegro, von Dr. Kurt Hassert, 279
Zur kartographischen Kenntniss von Montenegro, by Dr. Hassert, 179
Montreal Longitude Determinations, Work of the, by C. H. McLeod (New Publications), 183
Mopane tree of Mashonaland, 36
Morgan, E. Delmar, Remarks on "Three Years' Travel in the Congo Free State," 445
————————, Remarks on "A Pre-Columban Discovery of America," 235
Morgan, J. de, Mission scientifique en Perse (New Publications), 88
Morocco, New Publications—
Le Climat du Maghreb el Aksa, par A. Milhaud, 607
Notes sur le Tafilet, by G. Delbrel, 89
Pioneering in, by Dr. Kerr, 89
Morphologie der Erdoberfläche von Dr. A. Penck (New Publications), 184
Morphology of the Earth's Surface, Dr. Penck on the, Review on, by Prof. Lapworth, 575
Mosman, A. T., on the re-marking of the United States and Mexican boundary, 487
Mountain Falls, by W. M. Conway (New Publications), 397
Mozambique, Consul Churchill's visit to Table Mountain in, 272
Mporogomo river, Central Africa, 384
M'Toka rapids, Lualaba river, 438
Mules as means of transport in E. Africa, 382
Mulhall, M. G., The Carrying Trade of the World (New Publications), 401
Müller, F. Max, The Sacred Books of the East (New Publications), 404
Müllner, Dr. J., on the atlas of Austrian Lakes, 266
Murdoch, W. G. Burn, From Edinburgh to the Antarctic (New Publications), 92
Murray, Dr., on deep-sea deposits, 365
Murray, Dr. John, Medal awarded to, 592
Murray, J., How to live in Tropical Africa (New Publications), 282
Murray's Handbooks, New Publications—
Denmark and Iceland, 604
India, Ceylon, and Burma, 507
Rome and its Environs, 505
Scotland, 505
Museum, Field Columbian, Guide to, and Historical Account of (New Publications), 404
Muskrat falls, Labrador, 525
Mustagh-ata, Dr. Sven Hedin's journey to, 154
————————, glaciers of, 155
Muybridge, E., Descriptive Zoopraxography (New Publications), 405
Mwatate valley and mountain, E. Africa, 550
Mwele Hill, E. Africa, 559, 560
Mweru, Lake, Entrances of River Luapula into, Letter from Mr. A. Sharpe on, 391

N.

Nabathean inscriptions, 26
Nafa and Shuri, social life of Luchuans at, 540
Nagar people, Hindu Kush, 413
Nagualism, by D. G. Brinton (New Publications), 399
Naka-no-shima, 292
Nallino, C., La transcription des noms géographiques arabes, persans et turcs (New Publications), 404
Nan-shan highlands, 262, 263
Nantucket Island, Massachusetts, on the changes in the ocean shore-lines of, by H. L. Marindin (New Publications), 284
'Narrative' of the Cruise of the *Challenger*, 362
Natterer, Dr. K., observations on the Percolation of Sea-water, 174
Nature, the Realm of, an Outline of Physiography, by H. R. Mill (New Publications), 184
Nautical Almanac, New Publications—
The American Ephemeris and Nautical Almanac for 1897..397
Nautical Almanac and Astronomical Ephemeris for 1898..397
Navigation, Inland, in France, Mr. C. Hardinge's report on, 166
Ndara Mount, 554

Neby Hûd, 16
Necker Island, Note on, 274
Neotropical Mammal fauna, Past history of, 481
———— Region of the Geography of Mammals, 471 *et seq.*
Netherlands, New Publications—
De Taalkaart voor Noord-Nederland, by J. te Winkel, 604
Neumann, Herr, journeys in East Africa, 79, 384
Neumayr, Dr., on Antarctic Discovery, 589
New Caledonia, New Publications—
Guide de l'Emigrant en Nouvelle-Calédonie, 285
Newfoundland, Labrador and Southern Greenland, Glacial Phenomena of, Mr. Wright's observations on, 274
New England, New Publications—
Typical Eskers of Southern, by J. B. Woodworth, 609
Newfoundland, New Publications—
Glacial Phenomena of Labrador and, by G. F. Wright, 284
New Hebrides, New Publications—
La Terre Australe Inconnue, Onze croisières aux Nouvelles-Hébrides, par G. Beaune, 285
Newnes, Messrs. G., geographical pictures in 'Round the World,' 599
New York, Greater, 82
New York State, New Publications—
Report on the progress of the State Land Survey of, 91
New Zealand, Westland Alps of, Messrs. Douglas and Harper's explorations in, 61
New Zealand, New Publications—
Official Year Book for 1894, by E. J. von Dadelszen, 285
N'Gandu town, Congo Basin, 431
Ngaumdere, W. Africa, 50
Ngovi or Theuka Mountain, E. Africa, 547
Niagara Falls, The Age of the, Prof. Spencer's observations, 172
————, The Duration of, by J. W. Spencer (New Publications), 183
Nicaragua, New Maps—
Geologische Karte des nördlichen Teiles, von Dr. B. Mierisch, 510
Nichicun lake, Labrador, 518
Nielsen, Y., Atlas og Sahara (New Publications), 181
Niger, Map of country on left bank of, Note on, 273
——— and Benue, European trade on the, 53
Niger, New Publications—
Au Niger, Récits de Campagnes, 1891–92, par Commdt. Péroz, 607
Le régime du Niger, par H. Busson, 283
The Nile, by Sir C. Scott-Moncrieff, 606
Nikaria, Die Insel, von Dr. Büchner (New Maps), 287
Nile, New Publications—
Les Egyptiens connaissaient-ils la source de leur fleuve? par F. Ventre Bey, 283
Nizam-al-Mulk, chief of Chitral, 417, 422, 425
Nkonde plain, 113, 114
Nkongwe Aloe, 546
Nolde, Baron, Reise nach Innerarabien, 1893 (New Publications), 604
Norden af Dr. Magnus Roth (New Maps), 610
Nordenskiöld, Otto, projected expedition to Antarctic Regions, 488
Norsk Finmarken, Rambles in, by G. Lindesay (New Publications), 86
North Pole, An Artistic Expedition to the, by Julius v. Payer, 106, 488
North Sea, Hydrographic Research in the, 581
Northwest river, Labrador, 524
Norway, New Maps—
Photographs of, by Capt. Mockler-Ferryman, 192
Topografisk kart over kongerit Norge, 406
Norway, New Publications—
Den Norske Lods, udgiven af den Geografiske Opmaaling, af J. Fabricius, 505
Die Norwegische Commission der Europäischen Gradmessung, von O. E. Schiötz, 86
Om opdagelsen af "Nordkap" og veien til "det hvide hav" af Dr. Storm, 179
Norwegian Sea, the water in the, 582
Novara, M., by Prof. F. Borsari (New Publications), 400
Novaya Zemlya, An Expedition to, Letter from Mr. J. R. Jeaffreson on, 84
Novorossisk, by G. Bourge (New Publications), 280
Nseria country, Nyasaland, 114
Nyangwe, Congo Basin, 433, 442
Nyasa Company, Map of the district of Cabo Delgado, etc. (New Maps), 190
Nyasa, Lake, Crater Lakes north of, by Dr. Kerr-Cross, 112 *et seq.*
————, variations of depth of, 122
Nyasaland, climatic conditions and scenery of, 206
————, Indian and African in, 80
————, missionaries' work in, 202, 215
————, trade of, 215; plains, 208, 210; progress in, 202–205
Nyrén, M., Variations de la latitude de Poulkovo (New Publications), 396

O.

Obermayer, A. v., und H. A. Schindler, Die trigonometrische Höhenbestimmung des Hohen Sonnblicks, etc. (New Publications), 504

Obrucheff, M., expedition in Central Asia, 260, 489
Oceanic circulation, Dr. Buchan on, 364
Oceanographical observations of war-vessels and merchant-ships, Prof. Krümmel on, 590, 591
Oceanography, New Publications—
Come la navigazione da diporto possa validamente, etc., by Capt. D'Albertis, 397
Dei mezzi per promuovere te esplorazioni talassografiche, etc., by Prof. Dohrn, 397
Eine hydrographische Studie Swedenborg's, von Dr. Sieger, 397
Sur les premières campagnes scientifiques de la "Princess-Alice," by the Prince of Monaco, 397
Oder-Spree Canal, Germany, 379
Odessa, Plan of, 167
Odzi and Odzani rivers, 34, 35
Odzi river, big game shooting in neighbourhood of, 37, 38
Ohio, mounds and ruins in, 158
Okinawa or Great Luchu, 294, 298
Oki-no-Erabu-shima, 293
Oldham, H. Yule, A Pre-Columban Discovery of America, 221 *et seq.*
————, Letter from, on Mr. Markham's criticism of his paper, 501
————, theory of the discovery of America, Mr Markham's note on, 239
Olsen, O. T., The Fisherman's Nautical Almanac and Tide Tables (New Publications), 186
Ommanney, Sir E., Remarks on "A Journey to Tafilet," 335
————, Remarks on "Kolgueff Island," 105
Omo, The Course of the, 81
Omo river, New Publications—
I Fiumi Omo e Baro Secondo una Carta Abissina, by M. Sacchi, 283
Omsk to Tomsk, railway from, 149
Oppert, E., by A. Miessler (New Publications), 186
Ordnance Survey, The (New Publications), 404
———— Maps (New Maps), 93, 189, 286, 405, 509, 610
Ordos, plains of, 263, 264
Oriental Social Life, Studies in, by H. Clay Trumbull (New Publications), 404
Orissan port of Chitratala, Identification of the, by L. A. Waddell (New Publications), 88
Oshima Group, Luchu Islands, 292
Ostsee: *see* Baltic
Ostafrika: *see* Africa
Oswell, William Cotton, by His Honour Judge Hughes (New Publications), 186
Oubanghi: *see* Mobangi
Ouigurs or Uighurs, history of the, 565, 566, 573
Ovis Poli, 247
Oxen as means of transport in E. Africa, 382
Oxford Geographical Studentship, 377

P.

Pacific Coast, North American, Geographical work on the, in 1894..171
——— Slope, Table of Elevations within the, by Kerr and Chapman (New Publications), 608
Paganini, P., Del rilevamento fototopografico (New Publications), 398
Palenque, ruins at, 159
Palestine, summer travelling in, 8
————, Photographs of, by G. Robinson Lees (New Maps), 192
Palestine, New Publications—
Aperçu de la structure Géologique de l'Arabie Pétrée et de la Palestine, by Prof. Hull, 87
Pamirs, New Publications—
Forschungen über die physische Geographie des Hochlandes von Pamir, von Dr. S. Hedin, 88
Il Pamir e le regioni adiacenti, by F. De Rocca, 280
Pampas beds of fossil mammal remains, 482
Paphlagonischen Felsengräber, Die, von Kannenberg (New Publications), 280
Paraguay, New Publications—
Da Trinidad a S. Cruz de Sierra e Corumbà, etc., by Prof. Balzan, 91
Paringaux, M., Les futures voies ferrées des Pyrénées Centrales (New Publications), 178
Paris Geographical Society, Medals of the, 599
Parkes, J. C. E., Elementary Handbook of Geography of Sierra Leone (New Publications), 282
Parkin, R., The Great Dominion, Studies of Canada (New Publications), 608
Partiot, H. L., Estuaries (New Publications), 185
Pashtukhoff, A. V., Journeys in the Caucasus, 378
Pashtukhoff's Ascent of Ararat, 381
Passarge, Dr., The German Expedition to Adamawa, 50
Patagonian beds of fossil mammal remains, 482
———— subregion of the Neotropical Region, 480
Patents, etc., A practical treatise on, by D. Fulton (New Publications), 404
Pavie, M., Carte de l'Indo-Chine (New Maps), 189
Payer, J. v., An Artistic Expedition to the North Pole, 106
Payne, E. J., Remarks on "A Pre-Columban Discovery of America," 234
Peary, Lieut., visit to the Cape York Ironstone, 488
——— Relief Expedition, proposed, 597, 598
Peking, by T. Child (New Publications), 280
Pema-Koi district, 258

Pemba and Zanzibar, Dr. Baumann's expedition to, 597
Penck, Prof., researches on evaporation in Central Europe, 483
————, Morphologie der Erdoberfläche (New Publications), 184
————, Morphology of the Earth's Surface, Review on, by Prof. Lapworth, 575
Penck's Morphologie der Erdoberfläche, Einige Bemerkungen zu, by Dr. Löwl (New Publications), 396
Pendulum measurements by the Russians, 489
Penguin, H. M. surveying-ship, surveys on the Macclesfield Bank, 74
Pennesi, G., Pietro Martire d'Anghiera e le sue relazioni sulle scoperte oceaniche (New Publications), 403
Pennsylvania, New Publications—
Southern ice limit in, by E. H. Williams, 609
Perak, New Publications—
Alluvial Tin Prospecting, by L. Wray, 405
Tin Mines, etc., of, by L. Wray, 181
Perak Museum Notes. Experimental Culture of Silkworms, etc., by L. Wray, 401
Péroz, Commdt., Au Niger, Récits de Campagnes, 1891–92 (New Publications), 607
Persia, Sir H. Rawlinson's work in, 493
Persia, New Publications—
Mission scientifique en Perse, par J. de Morgan, 88
Perthes' Sea-Atlas, entworfen und bearbeitet von H. Habenicht (New Maps), 96
Peru, New Publications—
Vom Amazonenstrom nach der peruanischen Westküste, von G. Hübner, 285
Peshawur to Chitral, Route from, 426
Petitsickapau lake, Labrador, 530
Petrels in the Antarctic, 586
Petterson, O., A review of Swedish Hydrographic Research in the Baltic and North Seas (New Publications), 184
Philippine Islands, New Publications—
Estado actual y porvenir del Archipiélago Filipino, por D. J. N. Aguilar, 89
Photographs—
Bashan, Southern, by Mr. G. Robinson Lees, 408
France, Switzerland, Tonkin, and Annam, by Mr. J. Jackson, 192
Iceland, by Dr. Grossmann and O. Cahnheim, 192
Malay Peninsula, by Mr. H. M. Becher, 192
Norway, by Capt. Mockler-Ferryman, 192
Palestine, by Mr. G. Robinson Lees, 192
Physical Geography at the Vienna Congress, 266
Physical Geography, New Publications—
Morphologie der Erdoberfläche von Dr. A. Penck, 184
Physiography, Elementary (New Publications), 185
Pilcomayo, New Publications—
Reiser og opdagelser paa Pilcomayofloden, by O. J. Storm, 285
Pinsk Marshes, New Publications—
Die Trockenlegung des Poljesje, von F. Immanuel, 179
Pinto lake, Rocky Mountains, 56
Plants, New Publications—
On the subjective causes of Evolution as illustrated by the Geographical Distribution of Plants, by Professor Guthrie, 185
Primitiæ Floræ Marmaricæ, von Schweinfurth und Ascherson, 185
The Origin of Plant-structures, etc., by Rev. G. Henslow, 185
Plevna, The Defence of, Maps and plans made to illustrate Mr. Herbert's book (New Maps), 405
Polakowsky, Dr., Die Entwicklung der Republiken Chile und Argentinien (New Publications), 284
Polar Discovery, South, and the Ice-problem, Dr. E. von Drygalski on, 590
Pole, North, An Artistic Expedition to the, by J. v. Payer, 106
Poljesje : *see* Pinsk Marshes
Population of Mashonaland, 38
Porena, T., Delle vicende e degli ordinamenti dell' insegnamento geografico, etc. (New Publications), 401
Porter, Hon. R. P., The Eleventh United States Census (New Publications), 183
Portugal, New Publications—
Notes of a Journey in, by E. W. Mellor, 505
Portuguese discovery of America, 221 *et seq.*
———————— of Brazil in 1447, Letter from Mr. Westlake on, 390
Portuguese West Africa, commercial development of, 273
Possession Island, Antarctic Ocean, 587, 588
Post-Tertiary deposits of the Arctic Coast, 374
Powell, J. W., Twelfth Annual Report of the United States Geological Survey (New Publications), 90
Pre-Columban Discovery of America, by H. Yule Oldham, 221 *et seq.*
Preston, E., On the variation of latitude at Waikiki near Honolulu (New Publications), 396
Preuss, Th., Die Begräbnisarten der Amerikaner und Nordostasienten (New Publications), 188
Priem, F., L'extension Ancienne des Terres australes (New Publications), 183
Primary Geography, by A. E. Frye (New Publications), 188

Promoinœ lake, Kolgueff Island, 100
Pugrinoy river, Kolgueff Island, 101
Punchbowl tarn, Rocky Mountains, 58, 59
Pungwe river, 27, 28
Punjab, New Publications—
History of the, by Syad Muhammad Latif, 507
Report on the administration of the, 507
Purtscheller, L., Zur Entwickelungsgeschichte des Alpinismus, etc. (New Publications), 404
Pyrenees, New Publications—
Les futures voies ferrées des Pyrénées Centrales, by M. Paringaux, 178

R.

Radde, Dr. G., Ein Neujahrsfahrt in das Talyscher Tiefland (New Publications), 506
———, Journey in the Caucasus, 77
Rakapushi Mountain, Hunza, 414
Ramble round the Globe, A, by T. R. Dewar (New Publications), 188
Ramsay, Sir A. C., by Sir A. Geikie (New Publications), 400
Rançon, Dr., Le Boudou: Étude de Géographie et l'histoire Soudaniennes (New Publications), 182
Ransome, F. L., The Geology of Angel Island (New Publications), 183
Ravenstein, E. G., Note on Mr. Selous' Map of Mashonaland and Manika, 46
———, Remarks on "A Pre-Columban Discovery of America," 233
Rawlinson, Sir H. C., Obituary of, by Sir F. J. Goldsmid, 490
Redway, J. W., The First Landfall of Columbus (New Publications), 401
Reeves, J. S., The International Beginnings of the Congo Free State (New Publications), 283
Relief Practice Maps of Europe, etc., by L. R. Klemm (New Maps), 96
Revue river, Mashonaland, 32, 33
Reyer E., Geologische und geographische Experimente (New Publications), 396
Rhins, Dutreuil de, Mr. Littledale on the death of, 484
———, Dr. Sven Hedin on the death of, 380
Rhodesia of To-day, by E. F. Knight (New Publications), 181
Ricarde-Seaver, Major, Diamonds and Gold (New Publications), 182
Ricchieri, G., L'Italia e l'unificazione mondiale del tempo col sistema dei fusi orarî (New Publications), 399
Richardson, R., Corsica, Notes on a Recent Visit (New Publications), 395
Richter, E., Die wissenschaftliche Erforschung der Ostalpen, etc. (New Publications), 178
Richthofen, Freiherr von, Der Schauplatz des Krieges zwischen Japan und China (New Publications), 87
River-terraces, Alluvial, The Geographical Development of, by R. E. Dodge (New Publications), 398
Rivers, English, The Development of, by W. M. Davis, 127 *et seq.*
Rivers, New Publications—
Die Temperatur fliessender Gewässer Mitteleuropas, von Dr. Forster, 185
Estuaries, by H. L. Partiot, 185
Étude sur les embouchures des fleuves, par J. Girard, 185
The Training of Rivers, by L. F. Vernon-Harcourt, 185
Topographische Studien zur Gestaltung der Flussläufe, von Dr. Günther, 185
Roberts, General Lord, Remarks on "Chitral, Hunza, and the Hindu Kush," 422
Robertson, C., Is the Earth a Planet? (New Publications), 402
Robertson, Mr., mission to Chitral, 417
Robinson, C. N., The British Fleet (New Publications), 187
Robinson Lees, G., Photographs of Palestine (New Maps), 192
Roborovsky, M., expedition in Central Asia, 489
Rocca, F. de, Karatéghine et Darvoz (New Publications), 506
Rochefort, New Publications—
Contributions à l'étude de la géographie historique de Rochefort, by Fonteneau, 85
Rockhill, W. W., Diary of a Journey through Mongolia and Tibet (New Publications), 506
Rockville, On the variation of latitude at (New Publications), 396
Rocky Mountains, topography of, 60
Rocky Mountains, New Publications—
Lever topographique des Montagnes Rocheuses, par E. Deville, 183
Rodents of the Neotropical Region, 473
Rolland, G., Sur l'accroissements de température des couches terrestres avec la profondeur dans le bas Sahara Algérien (New Publications), 399
Roman road and milestones in Palestine, 12
Rome, New Publications—
Murray's Handbook of, 505
Roncagle, G., Studio preliminare per una stazione Geografica Italiana nelle regioni polari antartiche (New Publications), 285
Roosevelt, T., The Winning of the West (New Publications), 608
Ross, A. Carnegie, Beira (New Publications), 607
——, D., Some Notes on the Place-Names, etc., of Shetland (New Publications), 87
Rossikoff, M., measurements of Caucasian glaciers, 378

Roth, Dr. Magnus, Norden (New Maps), 610
Rouire, Dr., La Colonie de Lagos (New Publications), 282
Royal Colonial Institute, Catalogue of the Library of (New Publications), 405
Royal Geographical Society—
Afternoon technical meetings, 178, 393, 394
Annual Conversazione and Dinner, 377, 483
Antarctic Exploration Committee, 76
Award of Royal Medals, etc., 592
Christmas lectures by Dr. H. R. Mill, 166
Educational lectures by Mr. Mackinder, 76, 165
Franklin Commemoration Meeting, 376
International Geographical Congress, 76, 177, 277, 369, 593
Meetings of, Session 1894–95..84, 85, 177, 178, 277, 278, 392, 503, 603
Oxford Geographical Studentship, 377
Prizes to Scotch Training College Students, 377
Reception by the President, 75
Ruanda Country, Central Africa, 356
Rukinga Mount, E. Africa, 556
Runes, The, whence came they? by Prof. G. S. Stephens (New Publications), 186
Rungwe Mountain, Nyasaland, 115
Rupert river, Labrador, 516
Ruprecht, Dr., visit to Kolgueff Island, 98
Rusapi river, blast furnace of the Mashonas near, 41
Russell, Frank, explorations in Northern Canada, 486
———, T. C., Second Expedition to Mount St. Elias (New Publications), 90
Russia, New Publications—
Beschreibung russischer Handelshäfen, 604
Die Waldgränzen in Südrussland, von G. T. Tanfiljew, 86
Eisverhältnisse an den Seeküsten des russischen Reiches, Nach J. Spindler, 604
The Borderland of Czar and Kaiser, by P. Bigelow, 604
The Empire of the Tsars and the Russians, by A. Leroy-Beaulieu, Translation of, 86
Russian Armenia and the prospects for British Trade, by Dr. A. V. Markoff (New Publications), 508
——— Expedition to Abyssinia, 168
——— Exploration of the Sea of Marmora, 175
——— Geographical Society's Yearly Report for 1894..488
Russian lakes, New Publications—
Kulikowski's Untersuchungen über das Zuwachsen, etc., von D. Krahmer, 279
Ruwenzori, Mount, Mr. Scott Elliot's expedition to, 377

S.

Sacchi, M., I Fiumi Omo e Baro Secondo una Carta Abissina (New Publications), 283
Sacred Books of the East, edited by F. Max Müller (New Publications), 404
Saghru, Jebel, 325
Sahara, M. Foureau's Journey in the, 385
Sahara, New Publications—
Atlas og Sahara ap Prof. dr. Y. Nielsen, 181
Sur l'accroissement de température des couches terrestres avec la profondeur dans le bas Sahara Algérien, by M. Rolland, 399
Voyage au Gourâra et à l'Aougueroût, par le Commdt. Colonieu, 181
St. Brandan's Island, 230 *and note*
St. Elias, Mount, Alaska, 172
St. Elias, Mount, New Publications—
Second Expedition to, by T. C. Russell, 90
St. Helena, by R. A. Sterndale (New Publications), 182
Saint-Louis à Tripoli par le Lac Tchad, De, by Col. Monteil (New Publications), 607
Sakhalin, New Publications—
Die geschiedenis der ontdekking van het eiland Sachalin, door F. G. Kramp, 508
Saki-shima Group, Luchu Islands, 296
Salisbury, Fort, position of, 47
———, rainfall and geological formation of country round, 36
Salkad, castle and town of, 22–26
Samara, Russia, 148
Samba plateau and natives, Central Africa, 171
Samoyeds of Kolgueff Island, 101, 103
Sand-dunes and Winds on the South-west African Coast, Mr. Wilmer's note on, 385
Sandgirl Lake, Labrador, 525
Sandhills of Mongolia, 570
Sankuru river, Congo Basin, 429
Santa Cruz, fossil mammal remains in, 481
Sapin Crôche, Labrador, country along the, 515
Sapper, D. C., Die Republik Guatemala (New Maps), 190
———————, Die unabhängigen Indianerstaaten von Jucatan (New Publications), 608
———————, Grundzüge der physikalischen Geographie von Guatemala (New Publications), 285
Sarasin, P. und F., Reiseberichte aus Celebes (New Publications), 281
Sarikul, Ablasum Beg of, 245
Sarmento to Andrada, distance from, 49
Saskatchewan river, North America, 55
Saunders Island, Melville Bay, 352
Saunderson, H. S., Notes on Corea and its People (New Publications), 508

Savage-Landor, A. H., Corea or Cho-sen, the Land of the Morning Calm (New Publications), 508
Saweljew, Prof., visit to Kolgueff Island, 98
Schelde en der Mass, De gedaantewisselingen der, door Dr. Lorié (New Publications), 504
Scherman, Dr. L., Orientalische Bibliographie (New Publications), 400
Schiötz, O. E., Die Norwegische Commission der Europäischen Gradmessung (New Publications), 86
Schlegel, G., Les peuples étrangers chez les historiens Chinois (New Publications), 506
————, et H. Cordier, T'oung pao (New Publications), 605
Schlichter, Dr. H., Remarks on "A Pre-Columban Discovery of America," 236
Schmidt, E., Reise nach Südindien (New Publications), 88
Schools in the Luchu Islands, 457
Schrader, F., Atlas de Géographie Historique (New Maps), 191, 408, 510
————, L'Année Cartographique (New Maps), 95
Schweinfurth, Dr., Il mio recente viaggio col Dr. Schoeller nell' Eritrea Italiana (New Publications), 89
————, and P. Ascherson, Primitiæ Floræ Marmaricæ (New Publications), 185
Sclater, W. L., The Geography of Mammals. No. III., The Neotropical Region, 471 *et seq.*
Scobel, A., Geographisches Handbuch zu Andrees Handatlas (New Publications), 402
Scotch Training College Students, R G.S. prizes to, 377
Scotland, Hydrographic Research to the North of, 581
Scotland, New Publications—
Murray's Handbook for travellers in, 505
On the Glaciation of the West of, by D. Bell, 87
Scott-Moncrieff, Sir C., The Nile (New Publications), 606
Sea floor, forms of the, 580
Seals in the Antarctic, 586
Sea-water, the Percolation of, Dr. Natterer's observations on, 174
Seebohm, Mr. H., Remarks on "Kolgueff Island," 104
————, Remarks on "The Luchu Islands and their inhabitants," 544
Seenforschung, Die Fortschritte der, von Dr. R. Sieger (New Publications), 397
Seidel, A., Das Kisukuma (New Publications), 283
————, Praktisches Lehrbuch der Arabischen Umgangssprache syrischen Dialekts (New Publications), 186
——, H., Die natürlichen Kanäle auf den Salomo-Inseln (New Publications), 285
Seidlitz, N. v., Pastuchows Besteigung des Ararats (New Publications), 180
Seine-Inférieure, Le département de la, Par M. Fallex (New Publications), 604
Seir, Wadi, 2
Selkirks, Climbing in the, by W. S. Green, (New Publications), 608
Selous, Mr., Beira Railway: Map showing route of the line (New Maps), 510
————, map of Mashonaland and Manika, Note on, by Mr. Ravenstein, 46
Semenow, S. de, Le mouvement colonisateur de la race européenne hors d'Europe (New Publications), 403
Sentinel mountain, N. America, 55
Serengeti plains, E. Africa, 551
Severn River System, 144
Shah-dagh peak, Caucasus, 378
Shakespear, Capt., The Lushais and the land they live in (New Publications), 281
Shaler, N. S., A Study of the American Commonwealth, etc. (New Publications), 90
————, The Geological History of Harbours (New Publications), 402
————, The Origin and Nature of Soils (New Publications), 399
Sharpe, A., exploration of Mount Mlanji, 169
————, Letter from, on the Mouth of the Luapula river and Lake Mweru, 391
Shaw, Flora L., "Colonial Expansion" (New Publications), 401
Sheikh Husein, Somaliland, 126
Shetland, New Publications—
Some Notes on the Place-Names and Dialect of, by D. Ross, 87
Shichi-to or Seven Isles, Luchu Isles, 292
Shira Mountains, E. Africa, 595
Shire district, Lower, 194
Shiré Highlands, Mr. A. Sharpe's journey to the, 169
Shō-chū-ma writing of Luchuans, 538
Shore-lines, Constructional and Adolescent, 132, 134, 142
Siberia, aborigines of, 376
——, Baron Toll's Expedition to, 373
——, improvement of travelling in, 381
——, Dr. Woeikof's observations on temperatures in, 267
Siberia, New Publications—
My Recent voyages in, by Capt. Wiggins, 605
Siberian Railway, The Great, by P. Kropotkin, 146
Sicily and Portugal, New Publications—
Une heure en Sicile. Un coup-d'œil sur le Portugal. Par A. Boutroue, 505
Sieger, Dr. R., Die Fortschritte der Seenforschung (New Publications), 397
————, Eine hydrographische Studie Swedenborg's (New Publications), 397

Sierra Leone Boundary, 1895 . . 383
Sierra Leone, New Publications—
Elementary Handbook, etc., of, by J. C. E. Parkes, 282
Sijilmassa, ruins of, 334
Sikkim, New Publications—
A travers le Sikkim, by R. P. de Gryse, 180
Silica, Native, A treatise upon a series of quartz, etc., by B. Wright (New Publications), 405
Sill valley, 71
Skuphos, Dr., Die zwei grossen Erdbeben in Lokris (New Publications), 395
Slatin-Pasha's escape from Captivity, 597
Slave-trading in Central Africa, 195, 198
Smith, Consul C. S., Kilimanjaro Botanical Collection of, 79
————————, on Lake Chala, 79
——, Dr. Donaldson, expedition to Somaliland, 124
——, J., Andorra, the Republic of the Pyrenees (New Publications), 505
——, Miss L., The Music of Japan (New Publications), 88
Smyth, H. Warington, Notes of a Journey on the Upper Mekong, Siam (New Publications), 508
Snakes of the Luchu Islands, 299
Snow, Capt. Parker, Obituary of, by Mr. Markham, 500
Soils, The Origin and Nature of, by N. S. Shaler (New Publications), 399
Solenodonts of the Antillean Subregion, 473, 476
Solomon Islands, New Publications—
Die natürlichen Kanäle auf den Salomo-Inseln, von H. Seidel, 285
Somaliland, Dr. Donaldson Smith's expedition to, 124, 484
————————, Geographical Names in, 485
Somaliland, New Publications—
Un viaggio nella penisola dei Somali, by G. Candeo, 283
Songwe river, Central Africa, 112
Sonnblick, New Publications—
Die trigonometrische Höhenbestimmung des Hohen Sonnblicks, von Obermayer und Schiudler, 504
Spencer, Prof. J. W., observations on the Age of Niagara, 172
————————, on the restoration of the Antillean Continent, 385
————————, The Duration of Niagara Falls (New Publications), 183
Spessart, New Publications—
Gletscherspuren im Spessart, by G. Klemm, 179
Spindler, J., Eisverhältnisse an den Seeküsten des russischen Reiches (New Publications), 604
Stanford's Compendium of Geography and travel, North Africa, by A. H. Keane (New Publications), 607
———— Map of the British Possessions in West Africa (New Maps), 611
Stanford's map of the Transvaal Goldfields (New Maps), 407
———— Sketch-Map of the North-West Frontier of India (New Maps), 611
Stanley Pool, 427
————————, railway to, 443
Stanton, A. G., Tea (New Publications), 401
Stars, New Publications—
Catalogue of, by E. J. Stone, 92
Steinbach, Dr., Bemerkungen über das Klima von Jaluit (New Publications), 285
Steinhoff, R., Von den Teufelsmauern bei Blankenburg und bei Thale am Harz (New Publications), 179
Stephens, Prof. G., The Runes, Whence came they? (New Publications), 186
Sterndale, R. A., St. Helena (New Publications), 182
Sterneck, R. von, Die Polhöhe und ihre Schwankungen, etc. (New Publications), 92
Stevenson, R. Louis, on Maps, 83
Stone, E. J., Catalogue of 6424 Stars for the epoch 1890 (New Publications), 92
Storm, Dr. G., Om opdagelsen af "Nordkap" og veien til "det hvide hav" (New Publications), 179
——, O. J., Reiser og opdagelser paa Pilcomayo floden (New Publications), 285
Streams, Adjustment of, 135, 137
Stuhlmann, Dr., Bericht über eine Reise im Hinterlande von Bagamoyo (New Publications), 182
Suchum, Caucasus district, 78
Sudan, New Publications—
De Saint-Louis à Tripoli par le Lac Tchad, par Col. Monteil, 607
Sugar-planting in Luchu, 461
Sumba, Dr. Ten Kate's visit to, 164
Sun-wapta river, Rocky Mountains, 57
Superior, Lake, sailing directions for, issued by U.S. Hydrographic Office, 173, 183, 487
Suwa-no-se-jima, 292
Suwiswi river, Nyasaland, 121
Svanetia, Glaciers of, N. Zhukoff's description of the, 378
Swale-Ouse river, 141, 142
Swat district, 423
Swedish Hydrographic Research in the Baltic and North Seas, A review of, by O. Pettersson (New Publications), 184
Sweet-potato crops in Luchu Islands, 301
Switzerland, New Maps—
Geologische Karte der Schweiz, von Drs. Heim und Schmidt, 93
Topographischer Atlas der Schweiz (Swiss Federal Staff), 286
Switzerland, New Publications—
Annuaire de la Suisse Pittoresque et Hygiénique, etc., 87
Annuaire Statistique de la Suisse, 180
Aperçu sur la Topographie en Suisse, par M. H. L. Coulin, 87

Switzerland, New Publications—*contd.*
Verbreitung und Bewegung der Deutschen in der französischen Schweiz, von Dr. Zemmrich, 180
Syria and Arabia, by A. G. Wright (New Publications), 282
Syria, In, by F. Carrel (New Publications), 89

T.

Table Mountain, Mozambique, Consul Churchill's visit to, 272
Tacchini, P., Sulle carte magnetiche d'Italia, etc. (New Publications), 279
Tafilet, A Journey to, by W. B. Harris, 319 *et seq.*
———, Notes sur le, par G. Delbrel (New Publications), 89
———, provinces of, 331
Taghdumbash valley, Turkistan, 246
Taita Highlands, Upon a visit to Tsavo and the, by C. W. Hobley, 545 *et seq.*
Take-shima, Luchu Islands, 292
Talbot, Major Hon. M. G., Description of the Method of executing Rapid or Reconnaissance Triangulation (New Publications), 399
Talyscher Tiefland, Ein Neujahrsfahrt in das, von Dr. G. Radde (New Publications), 506
Tane-ga-shima Island, Luchu Islands, 291
Tanfiljew, G. T., Die Waldgränzen in Sudrussland (New Publications), 86
Tanijiud province of Tafilet, 332
Tanner, Col., Remarks on "Chitral, Hunza, and the Hindu Kush," 425
Tapirs of the Neotropical Region, 473, 478
Tarns of Lakeland, The, by J. E. Marr (New Publications), 279
Tarns of the English Lake District, Mr. J. E. Marr's observations on, 77
Tartars, The Fish-skin, by E. H. Fraser (New Publications), 181
Taschen-Atlas, Prof. Hickman's geografisch-statistischer (New Maps), 190
Tea, by A. G. Stanton (New Publications), 401
Téglás, G., Nouvelles recherches topographiques sur la Dacie (New Publications), 504
Temperature, New Publications—
On Rapid Variations of Atmospheric Temperature, by J. Y. Buchanan, 397
Temperature of Soil, Water, and Air, by H. R. Mill, 397
Temperatures, Dr. Woeikof's observations on, 267
Ten Kate, Dr., travels in the Indian Archipelago, 163
Termites, New Publications—
Ueber die Bedeutung der Termiten für Erdbewegung, etc., by O. Lenz, 398
Textilindustrie Europas, Die, von G. Webersik (New Publications), 279
Thai-yuan-fu, 261
Thames river system, 144, 145
Thantia, ruins of, 15
Thebeen, Bashan, 22
Theuka or Ngovi Mountain, E. Africa, 547
Thomas, J. P., Viti (New Publications), 91
Thoroddsen, Th., Fra det sydøstlige Island (New Publications), 505
Thoulet, M., Les vases marine et leur classification (New Publications), 398
Thynne, R., The Story of Australian Exploration (New Publications), 91
Tibet, religion of, Dr. Waddell on, 594
Tibet, New Publications—
The Buddhism of Tibet or Lamaism, etc., by L. A. Waddell, 508
The Gates of, by J. A. H. Louis, 280
Timbuktu, the Country North of, 384
———, map of the neighbourhood of, Note on, 273
Time-standards, New Publications—
L'Italia e l'unificazione mondiale del tempo col sistema dei fusi orarî, by G. Ricchieri, 399
Times Atlas, The (New Maps), 611
Timor Group, Dr. Ten Kate's visit to the, 163
Tirich Mir Peak, Chitral, 421, 425 *note*
Tizi n' Glawi, Atlas Mountains, 322
Tizimi province of Tafilet, 331
Tizuaf river, valley of the, 244
Todghrá, Wad, 327, 328
Tograsu river, Turkistan, 242
Tokara-shima, Luchu Islands, 292
Toku-no-shima, 293
Toll, Baron, Expedition to Arctic Siberia, 373
Tomsk, Siberia, 149
Tonaki-jima, 295
Tonkin, New Publications—
Le Port du Tonkin dans la rade de Tien-Yen, 180
Topley, W., Memoir of, by H. B. Woodward (New Publications), 187
Tori-shima or Iwo-zan, 295
Toscanelli-Karte v. J. 1474, Die Rekonstruktion der, von H. Wagner (New Publications), 403
Training College Students, Scotch, R G.S. prizes to, 377
Transbaikalian Filiation of the Amur Geographical Society, 381
Transport in East Africa, Dr. Lent's observations on, 381
Transport, New Publications—
Die geographische Verbreitung der Transportmittel des Landverkehrs, von A. Hettner, 187
Transvaal Goldfields, New Maps—
Stanford's map of the, 407
Travancore, Notes on a Tour in, by M. A. Lawson (New Publications), 581
Trent river, 143
Trevithick, F. H., History, etc., of Railway System in Japan (New Publications). 507
Trevor-Battye, A., Kolgueff Island, 97 *et seq.*

Triangulation of Africa, by Gen. Chapman, 467
Triangulation, Method of executing Rapid, by Major M. G. Talbot (New Publications), 399
Tropical Cultivation, Delusions about, by Sir G. W. Des Vœux (New Publications), 186
Trumbull, H. Clay, Studies in Oriental Social Life (New Publications), 404
Tsang-po (San-Pu), The falls of the, and identity of that river with the Brahmaputra, by L. A. Waddell, 258
Tsanner glaciers, Caucasus, 378
Tsars and the Russians, The Empire of the, by A. Leroy-Beaulieu (New Publications), 86
Tsavo river, E. Africa, 546
—— and the Taita Highlands, Upon a Visit to, by C. W. Hobley, 545 *et seq.*
Tsetse fly in Mashonaland, 29
Tsing-ling-shan, M. Obruchoff's journey across the, 265
Tuf Faf, Somaliland, 485
Tugána plateau, 320
Tugu plain, Somaliland, 485
Tung valley, Turkistan, 245
Tungani race, 252
Tunis, New Maps—
Tunisie. Carte Reconnaissance, Publiée par le Service Géographique de l'Armée, 95
Tupper, Sir C., The Economic Development of Canada (New Publications), 182
Turkey in Asia, New Publications—
La Turquie d'Asie, Géographie administrative, etc., by V. Cuinet, 508
Turkistan, A Trip to, by Capt. H. Bower, 240 *et seq.*
Tvüber glacier, Caucasus, 378
Tyrrell, J. B., Work in the Barren Lands, 269
Tyumen, Siberia, 147

U.

Ubena-Nyasa-Expedition, Beobachtungen auf der, von G. Lieder (New Publications), 182
Uechtritz, B. E. von, Reisen in Südwest-Afrika (New Publications), 607
Uganda and Unyoro, improvements in, 80
Uganda, New Publications—
Chronicles of, by Rev. R. P. Ashe, 282
Uighurs or Ouigurs, history of the, 565, 566, 573
Uke-shima, 293
Ukukwe plain, Nyasaland, 121
Uliasutai, Mongolia, 568, 574
Ul Turug, Morocco, 329
Umm el Jemal, 7, 16–21
Umra Khan of Chitral, 422
Umtali, Mashonaland, 34
—— district, gold-bearing reefs of the, 37
Underground city, Turkistan, 255
Ungulates of the Neotropical Region, 472, 473
Unila river, Morocco, 322
United States and Mexican Boundary, re-marking of, 487
—— Hydrographic Office sailing directions for Lake Superior, 173, 487
United States, New Maps—
Hydrographic Charts, 192, 288, 512
United States, New Publications—
A Study of the American Commonwealth, etc., by N. S. Shaler, 90
Annual Report of United States Geological Survey, by J. W. Powell, 90
Average Elevation of, by H. Gannett, 90
Eleventh Census of the, by Hon. R. P. Porter, 183
Le Salaire aux États-Unis, par M. E. Levasseur, 609
Report of the Superintendent of the Coast and Geodetic Survey for 1892.. 284
Sailing directions for Lake Superior, 183
University, Physical Geography in the, Prof. Davis on, 175
Unser Fritz Waterfall, 63
Updegraff, M., Determinations of the Latitude, etc., of the Laws Observatory, Missouri (New Publications), 284
Ural, New Publications—
Ein Ausflug nach dem Süd-Ural, von Dr. Futterer, 179
Urga, highlands to the north of, 261
——, Mongolia, 562
Usambara, Flora of, Carl Holst's researches into the, 169
Ushirombo, Central Africa, 355
Usuri river, Siberia, 152, 153
Uxmal, ruins at, 159

V.

Van der Chijs, J. A., Nederlandsch-Indisch Plakaatboek (New Publications), 281
Vases marine et leur classification, Les, par M. Thoulet (New Publications), 398
Venice, Geographical Congress at, 369
Ventre Bey, F., Les Égyptiens connaissaient-ils la source de leur fleuve? (New Publications), 283
Verkhoyansk Range, Siberia, 373
Vernon-Harcourt, L. F., The training of rivers (New Publications), 185
Vespuccius, A., The voyage from Lisbon to India, 1505–6, by, translated, etc., by C. H. Coote (New Publications), 402
Veth, P. J., Het Paard onder de Volken van het Maleische ras (New Publications), 88
——, Obituary of, by Prof. Dr. Kan, 600
Victoria-Njanese, Am Ostufer des, von Dr. Fischer (New Publications), 606
Victoria Nyanza, Results of Dr. Fischer's journeys in country east of, 384

Vienna Congress, Physical Geography at the, 266
Vierkandt, Dr. Die Volksdichte im Westlichen Central-Afrika (New Publications), 606
Vilkitsky, M., expedition in Northern Siberia, 489
Vilui, Siberia, Navigation on the, 381
Vincent, F., Actual Africa; or the Coming Continent (New Publications), 605
Virunga mountains, Central Africa, 358
Viti, by J. P. Thomson (New Publications), 91
Voi, Valley of the, E. Africa, 549, 554
Volcanic area in Nyasaland, 114
Volkens, Dr. G., Exkursionen am Kilima-Ndjaro (New Publications), 607
———, researches on Kilimanjaro, 595
Vosges, New Publications—
Les Montagnes de France, Les Vosges, by G. Fraipont, 395
Voyageurs, Instructions pour les, par E. Caron (New Publications), 399

W.

Wachagga tribe, 595, 596
Wad El-Melha province of Tafilet, 332
—— Ifli province of Tafilet, 332
—— Misfiwa, Morocco, 320
Waddell, L. A., Identification of the old Orissan port of Chitratala (New Publications), 88
———, researches on Lamaism, 594
———, The Buddhism of Tibet or Lamaism (New Publications), 508
——— The Falls of the Tsang-po (San-Pu), and identity of that river with the Brahmaputra, 258
Wadi Dhulail, 13, 14
—— Seir, 2
Waginia tribe, Congo basin, 436
Wagner, H., Die Rekonstruktion de Toscanelli-Karte v. J. 1474, etc. (New Publications), 403
——— Geographisches Jahrbuch (New Publications), 188
———, on the History of Cartography, 590
Wahuma tribe, Central Africa, 358
Waiho river, New Zealand, 61
Wake, C. S., Memoirs of the International Congress of Anthropology (New Publications), 186
Wakkhi nomads, Turkistan, 243
Walangulo tribe, 557
Walcott, C. D., The North American Continent during Cambrian time (New Publications), 90
Wales, New Publications—
Thorough Guide Series, North Wales, by Baddeley and Ward, 604
Walker, G. C., Gazetteer of the Lahore District (New Publications), 180
———, Gen., Remarks on "Chitral, Hunza, and the Hindu Kush," 426
Walker, Rev. F. A., History of Rev. Oddo Gislason of Iceland (New Publications), 179
Waller, Rev. H., Remarks on "The British Central Africa Protectorate," 216
Wanga district and town, 558
Wa-nkonde tribe, Central Africa, 112, 113
Wa-nyakyusa tribe and villages, Nyasaland, 116, 117
Warburg, Dr., on the flora of Usambara, 170
Ward, C. S., Thorough Guide Series, The Isle of Wight and N. Wales (New Publications), 604
Wash, rivers of the, 144
Washamba of Usambara, 170
Wataita tribe, 552, 553
Water-holes at Birikani, 556
Waujabillio tribe. Congo basin, 439
Wazumba tribe, Central Africa, 355
Weald dome, drainage of the, 145, 146
Webersik, Die Textilindustrie Europas (New Publications), 279
Webi Shebeli, naming of, Somaliland, 485
Wedza, Mount, ironworks near, 40
Welle and Darfur, Belgian Exploration between the, 81
Wells, L. B., A sketch of the history of Canal and River Navigations of England and Wales (New Publications), 85
Weltverkehrs, Wandkarte des, von Kirchhoff und Herrich (New Maps), 288
Wenckstern, Fr. von, Bibliography of the Japanese Empire (New Publications), 507
West, The Winning of the, by T. Roosevelt (New Publications), 608
West Indies, fauna of, 476
Westlake, J., Letter from, on the Supposed Discovery of Brazil by the Portuguese in 1447..390
Westland Alps, New Zealand, Messrs. Douglas and Harper's explorations in the, 61
Whirlpool river, Rocky Mountains, 58
Whitehead, J. B., report on Inland Navigation in Germany, 378
Whitney, E. L., Government of the Colony of South Carolina (New Publications), 609
Whymper, E., The Observatory on the Summit of Ben Nevis (New Publications), 87
Whyte, Mr., Remarks on "The British Central Africa Protectorate," 216
Wien, Dr., Ueber den Einfluss des Windes auf die Gestalt der Meereswellen (New Publications), 184
Wiggins, Capt., My Recent Voyages in Siberia (New Publications), 605
Wight, Isle of, New Publications—
Thorough Guide Series, by C. S. Ward, 604
Wild, Johannes, Der Topograph, von J. J. Egli (New Publications), 187
Wilde, H., On the Influence of the Configuration, etc., of Coast Lines upon the Rate and Range of Secular Magnetic Declination (New Publications), 93

Wilke, K., J. W. Ludwig Leichhardt (New Publications), 400
Williams, E. H., Notes on the Southern Ice limit in Eastern Pennsylvania (New Publications), 609
Wilmer, H. C., on the Sand-dunes and Winds of the S.W. African Coast, 385
Wilson, Anne C., After Five Years in India (New Publications), 281
Wind, New Publications—
Ueber den Einfluss des Windes auf die Gestalt der Meereswellen, von Dr. Wien, 184
Winds and Sand-dunes on the S.W. African Coast, 385
Winkel, J. te, De Taalkaart voor Noord-Nederland (New Publications), 604
Winokapau lake, Labrador, 526
Winton, Sir F. de, Remarks on "Three Years' Travel in the Congo Free State," 442
Witte, Dr. H., Das Deutsche Sprachgebiet Lothringens (New Publications), 279
Woeikof, Dr., observations on temperatures, 267
Wolkenhauer, Dr., Gerhard Mercator (New Publications), 186
———, W., Heinrich Brugsch (New Publications), 400
Wood, Sir E., The Crimea in 1854 and 1894 (New Publications), 86
Woodrow, G. M., Notes on a Journey from Haveri to Kumta (New Publications), 281
Woodward, H. B., Memoir of William Topley (New Publications), 187
———, H. P., Mining Handbook to the Colony of Western Australia (New Publications), 92
Woodworth, J. B., Some Typical Eskers of Southern New England (New Publications), 609
World, Proposed Map of the, on the Scale of One-Millionth, 275
World-wide Atlas of Modern Geography, by W. & A. K. Johnston (New Maps), 96
World, New Maps—
Mappaemundi, Die ältesten Weltkarten, von Dr. Miller, 288, 407
Wandkarte des Weltverkehrs, von Kirchhoff und Herrich, 288
World, New Publications—
Chambers' Concise Gazetteer of the, 188
Le Projet de Carte de la Terre à l'échelle du 1/1,000,000, par M. Barbier, 184
The Carrying Trade of the World, by M. G. Mulhall, 401
Wray, L., Perak Museum Notes, Alluvial Tin Prospecting, etc. (New Publications), 405
———, The Experimental Culture of Silkworms in Perak, etc. (New Publications), 401
———, The Tin Mines and the Mining Industries of Perak (New Publications), 181
Wright, A. G., Syria and Arabia (New Publications), 282
Wright, B., Native Silica, a treatise upon a series of quartz, etc. (New Publications), 405
———, G. J., Observations on Glacial Phenomena of Newfoundland, Labrador, and Southern Greenland, 274
———, Observations upon the Glacial Phenomena of Newfoundland, etc. (New Publications), 284
Wundale country, Central Africa, 120, 121
Würmsee, or Lake of Starnberg, 72
Wutiva, crater lake, Nyasaland, 116
Wyld's Military Staff Map of Central Asia and Afghanistan (New Maps), 610
Wyndlawn caves, Somaliland, 126

Y.

Yaku-no-shima Island, Luchu Islands, 291
Yam-bulak glacier, Central Asia, 156
Yaos, slave-trading of the, 198–201
Yarkand, route to, 248
Yarkhun river, 424
Yaúnde, von G. Zenker (New Publications), 606
Yayeyama group, 296, 297
Yoko-shima, 292
Yonakuni, islands of, ideographic writing of the, 536
Yonakuni-jima, 297
York, Cape, Melville Bay, 354
———, Ironstone at, Lieut. Peary's visit to, 488
Yoro-shima, 293
Yoron-jima, 294
Younghusband, Capt., Chitral, Hunza, and the Hindu Kush, 409 *et seq.*
———, Chitral and the States of the Hindu Kush (New Publications), 605
———, On the Kashmir frontier (New Publications), 507
Yucatan, New Publications—
Die unabhängigen Indianerstaaten von, von Dr. Sapper, 608
Yuruan river and station, British Guiana, 341

Z.

Zambezi river, delineation of the, 48
Zangwe river, Mr. Anderson's explorations of the mouth of, 596
Zanzibar Island, new road by Mr. Last in, 80
———, Pemba and Mafia, Dr. Baumann's proposed expedition to, 597
Zemmrich, Dr., Verbreitung und Bewegung der Deutschen in der französischen Schweiz (New Publications), 180
Zenker, G., Yaúnde (New Publications), 606
Zerka river, Palestine, 8
Zhukoff, N., on the glaciers of the Caucasus, 378
Zomba district, 194
Zondervan, H., Hallier's Botanische Reisen in West Borneo (New Publications), 180
Zoopraxography, Descriptive, by E. Muybridge (New Publications), 405

INDEX TO MAPS.

EUROPE.

Europe, Northern, part of, 99

ASIA.

Bashan, Southern, Mr. Robinson Lees' route across, 14
Chitral and Adjacent Countries, 512
Luchu Islands, illustrating Mr. Chamberlain's paper, 408
Siberian Railway, The Great, 150

AFRICA.

Africa, Lieut. Count von Götzen's Expedition across, Sketch-Map of, 357
British Central Africa Protectorate, 288
Congo Basin, South-Eastern, part of, 512
Crater lakes, North of Lake Nyassa, 117
Kisigau and Kilibasi Mounts, 555
Mashonaland and Manika, 96
Mombasa and Vanga, country between, 559
Morocco and Tafilet, Mr. Harris' routes between, 408
Sierra Leone, Anglo-French Boundary near, 383
Somaliland, Western, Dr. Donaldson Smith's Route in, 125
Taita Mountains, Sketch-Map by Mr. Hobley, 548
Zangwa River, Entrance to, 596

AMERICA.

Athabasca River, Sources of, and Mr. Coleman's route to Mount Brown, 96
British Guiana and Barima River, Mr. Dixon's Compass Survey of, 408
British Guiana and Venezuela, part of, 408
Labrador, Map to illustrate Mr. Low's paper, 612

ARCTIC.

Kolgueff Island, 100
Melville Bay, Astrup's sledge journey to, 347
Melville Bay, Profile of north shore of, 353
————, Sketch Map of, 349

ANTARCTIC.

Chart, showing route of the *Antarctic*, 585

GENERAL.

Behaim's Globe, portion of, A.D. 1492..228
Bianco, Andrea, Sketch of Map by, A.D. 1448..222, 224, 226
Geography of Mammals, Map of Neotropical Region, 512

ILLUSTRATIONS AND DIAGRAMS.

EUROPE.

English Rivers, Diagrams illustrating Prof. Davis' paper on, 132–142

ASIA.

Bashan, Bosra and the Roman Road, 6
———, Kelat ez Zerka, 9
Chitral Bridge and Tirach Mir, 418
——— Fort, from south bank of river, 420
——— Valley, looking south, 416
Gobi Desert, view in the, 563
Hindu Kush, A Lost Snowpeak, 410
———, Midsummer snowfields looking towards Chitral, 412
———, Rakapushi Mountain, 414
Luchu Islands, coiffures of natives, 448
———, common people of Nafa, 312
———, gentleman of, 318
———, graves, 451
Luchu Islands, Ideographic writing of the, 537, 538
———, Nase, the port of Oshima, 307
———, Palace (Shuri), 305
———, tattooed hands of natives, 447
Mongolia, High Street, Kobdo, 567
———, Inside fort at Kobdo, 565
———, "Om Mane Padme Hom," in white stones on hillside, 569
———, starting for the sandhills, 571
Tsang-po (San-pu), Falls of the (native drawing), 259

AFRICA.

Chimoio to Salisbury, Longitudinal Section of Mr. Eckersley's route from, 32
Congo Free State, Floating Island on the Lualaba, 436
———, Native Canoe on the Lualaba, 437
———, Nyangwe, 433
———, Waginia village, 435
———, Water-worn rocks on the Lualaba, 440
Fontesvilla Pungwe River, 28
Mashona Blast Furnace, 41, 42
——— Kraal on river Mezi, 39
Mlanje Mount, Gorge on, 209
———, Pine forests on, 211
———, Widdringtonia Whytei, 213
———, Zomba Peak, 207
Montikwiri Mount, Mashonaland, 37
Morambala Mountains from Shire River View of, 203
Murchison Falls, view near, 197
Odzi River, at junction with Odzani, 35
Raphia Palms, British Central Africa, 199
Sclater's Road, British Central Africa, 205
Zomba, Residency Garden, view from, 195

NEW ZEALAND.

Cook River-bed, view of Ranges from, 64
Fox Glacier, looking up, 67
Franz Josef Glacier, view overlooking, 65
Westland Alps, general view, 63

GENERAL.

Aberdare, Lord, portrait of, 387
Rawlinson, Sir Henry, portrait of, 491

PRINTED BY WILLIAM CLOWES AND SONS, LIMITED, LONDON AND BECCLES.